

Integrated Operations / Payloads / Fleet Analysis Final Report

Volume III: System Costs

Appendix A: Program Direct Costs



Prepared by ADVANCED VEHICLE SYSTEMS DIRECTORATE
Systems Planning Division

August 1971

Prepared for OFFICE OF MANNED SPACE FLIGHT
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
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INTEGRATED OPERATIONS/PAYLOADS/FLEET
ANALYSIS FINAL REPORT

Volume III: System Costs
Appendix A: Program Direct Costs

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Advanced Vehicle Systems Directorate
Systems Planning Division

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APPENDIX A. PROGRAM DIRECT COSTS

A.1 INTRODUCTION

To enable determination of the cost impact associated with small changes to the mission models described in this final report, individualized program direct costs for each satellite program are presented in this Appendix. This breakdown provides the "activity level dependent costs" for each satellite program. Thus, for example, the cost impact of eliminating one satellite program from the mission model is obtained by the reduction of the "activity level dependent costs" associated with that particular satellite program.

The "activity level dependent costs," or, more simply, program direct costs, are comprised of the total payload costs (as these costs are strictly program dependent) and the direct launch vehicle costs. As all launch vehicle costs are not totally program dependent (e.g., range support, supply depot, etc.), only those incremental launch vehicle costs associated directly with the satellite program are considered. For expendable launch vehicles the direct costs include the vehicle investment hardware costs and the launch operations costs. For the reusable STS vehicles the direct costs include only the launch operations, recovery operations, command and control, vehicle maintenance, and propellant support. The costs associated with amortization of reusable vehicle investment, RDT&E range support, etc., are not included.

Program direct costs are presented for the following specific cases:

<u>Case</u>	<u>Launch Vehicle System</u>	<u>Payload System</u>
Case A	Current Expendable	Current Expendable
Case B	New Low Cost Expendable	Best Mix
Case C	STS (Space Tug IOC-1979)	Best Mix
Case C-1	STS (Space Tug IOC-1979)	Current Expendable Adapted for Reuse
Case C-2	STS (Space Tug IOC-1985)*	Best Mix
Case K	STS (Space Tug IOC-1979) With Sortie Missions Included	Best Mix

* Agena and Centaur upper stages 1979 - 1984.

A.2 COST INPUT DATA

The payload cost data are obtained directly from the time-phased payload program cost data presented in the main body of Volume III. These costs represent total payload costs on a cash flow basis.

The direct launch vehicle costs are obtained from the average launch vehicle cost per flight data presented in Volume III. These costs represent the direct operating costs (DOC), or user charge, attributable to each individual launch vehicle. Tables A-2 through A-7 present a summary of the expendable and reusable launch vehicle DOC for each of the six cases considered. As the expendable launch vehicle costs are rate dependent, their costs will vary for the two different launch sites (ETR and WTR) and for the different cases considered. As a result of this rate dependency, any change in the launch rate of a specific launch vehicle will alter its direct cost per flight. As a rule of thumb, the cost per flight of any expendable launch vehicle is proportional to (annual launch rate)^{-0.2}, or

$$C_L \propto (R)^{-0.2}$$

where

C_L = Direct cost per flight

R = Annual launch rate

Though the above approximation is not an exact representation of the actual cost/rate relationship, it should be sufficiently accurate for assessing small variations in the mission model.

In order to present the launch vehicle costs on a cash flow basis, in a manner similar to the payload cost data, the costs are spread over a three year period in accord with the schedule in Table A-1.

Table A-1. Launch Vehicle Cost Flow

	n - 2	n - 1	Year of Launch n
Expendable Launch Vehicles (including hardware and direct operations)	25%	55%	20%
STS	0%	0%	100%

The above cost spreading for the expendable vehicles represents only an average value for the many vehicles considered. Therefore, exact comparison on a year-by-year basis with the launch vehicle costs presented in Volume III is not possible. The total expendable launch vehicle direct costs, however, will be comparable.

A.3 PROGRAM COSTS DUE TO RELIABILITY

A description of the launch vehicle reliability and payload infant mortality considered in evaluating the total system costs is provided in Section 3.3 of Volume V of this report. All of the launch vehicle reliability and payload infant mortality cost estimates, with the exception of the three Space Tug non-recoverable failures, are considered as direct operating costs and are consequently included in the individual program direct costs presented in this Appendix. Table A-8 summarizes the methodology of incorporating these effects into the cost analysis.

A.4 INDIVIDUAL PROGRAM DIRECT COSTS

The program direct costs are presented in computer tabular printout form. Three separate formats are utilized: two summary tabular formats and an individual program format.

The first summary format presents direct program total costs in terms of total payload costs, launch vehicle direct costs, and program direct costs on a satellite program-by-program basis (refer to Tables A-9, A-14, A-17, and A-20).

The second summary format presents direct program life cycle costs on a program-by-program basis. These costs group both the launch vehicle direct costs and payload total costs on a year by year basis (refer to Tables A-10, A-11, A-12, A-15, A-18, and A-21).

The third format presents life cycle costs for each program, in terms of payload total costs, launch vehicle direct costs, and program direct costs (refer to Tables A-13, A-16, A-19, and A-22). Each satellite program is presented on a separate computer printout sheet, with the following information provided in addition to the cost data:

- (a) Number of payloads launched (for the STS this includes new and refurbished payloads).
- (b) Expendable launch vehicle types and number of launches.
- (c) Number of Space Shuttle and reusable Space Tug launches and number of Space Tugs expended.
- (d) The launch site (ETR or WTR).

The individual program cost data are presented by cases in accordance with the following schedule:

- Section 1: Cases A, B, C (Tables A-9, A-10, A-11, A-12, A-13)
- Section 2: Cases A, B, C-1 (Tables A-14, A-10, A-11, A-15, A-16)
- Section 3: Cases A, B, C-2 (Tables A-17, A-10, A-11, A-18, A-19)
- Section 4: Case K (Tables A-20, A-21, A-22)

Note that the data in each section are organized by the cases to be compared, so that tables previously used often are repeated for the convenience of the user. The cases are those described in the main text of Volume III and listed

on page III-A-1. The expendable launch vehicle cases (Cases A and B) are repeated in the first three sections to provide easy comparison with the different STS cases considered. Case K has a slightly altered mission model from Cases A and B and is therefore not compared with them.

(Editor's Note: There is a difference in terminology between this volume and Volumes II and V as regards two NASA payloads. Tables A-9 through A-22 list a "Radio Explorer" which in Volumes II and V is referred to as "Astronomy Explorer B." Also, these tables list an "Astronomy Explorer" which in Volumes II and V is called "Astronomy Explorer A.")

Table A-2. Direct Launch Vehicle Costs Current Expendable Fleet,
Case A

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCT	WTR	3.4
TAT (3C)/DELTA	TAT3/D	ETR	6.2
		WTR	5.8
TAT (3C)/DELTA/TE-364	TAT3/D/T	ETR	7.0
TAT (9C)/DELTA/TE-364	TAT9/D/T	ETR	7.0
		WTR	6.4
TITAN IIIB/AGENA	T3B/A	ETR	8.9
		WTR	10.7
TITAN IIIB/CENTAUR	T3B/C	ETR	10.5
		WTR	12.6
TITAN IIIC	T3C	ETR	12.6
		WTR	13.4
TITAN IIID	T3D	WTR	9.8
TITAN IIID/CENTAUR	T3D/C	ETR	16.1
TITAN IIID (7 SEG)	T3F	WTR	10.6
TITAN IIID (7 SEG)/CENTAUR	T3F/C	ETR	16.6
		WTR	18.9
TITAN IIID (7 SEG)/CENTAUR/ BURNER II	T3F/C/B	ETR	17.6
TITAN III M + BIG "G"	T3M+G	ETR	45.1
INTERMEDIATE 21	I21	ETR	240.0

Table A-3. Direct Launch Vehicle Costs New Expendable Fleet,
Case B

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCOUT	WTR	3.4
5 SEG SRM/CORE II/TE-364	5/2/T	ETR	4.6
		WTR	4.5
5 SEG SRM/CORE II/CENTAUR	5/2/C	ETR	10.0
		WTR	10.4
5 SEG SRM/CORE II/CENTAUR/ TE-364	5/2/C/T	ETR	10.3
TITAN IID	T3D	WTR	9.8
TITAN IID/BURNER II	T3D/B	ETR	10.4
		WTR	10.3
TITAN IID/CENTAUR	T3D/C	ETR	15.5
		WTR	15.9
TITAN IID (7 SEG)	T3F	WTR	10.2
TITAN IID (7 SEG)/BURNER II	T3F/B	ETR	11.0
		WTR	10.9
TITAN IID (7 SEG)/CENTAUR	T3F/C	ETR	16.0
		WTR	16.3
TITAN IID (7 SEG)/CENTAUR/B-II	T3F/C/B	ETR	16.8
TITAN III M + BIG "G"	T3M + G	ETR	45.0
TITAN III L4	T3L4	ETR	35.8
TITAN III L4/CENTAUR	T3L4/C	ETR	40.8

Table A-4. Direct Launch Vehicle Costs Space Transportation System, Case C

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCT	WTR	3.4
TAT (3C)/DELTA/TE-364	TAT3/D/T	WTR	10.6
TITAN IIB/CENTAUR	T3B/C	ETR	14.9
		WTR	15.6
TITAN IIB/CENTAUR/BURNER II	T3B/C/B	ETR	15.1
TITAN IIC	T3C	ETR	16.2
		WTR	17.4
TITAN IID	T3C	WTR	10.4
TITAN IID/CENTAUR	T3D/C	ETR	19.0
		WTR	18.3
TITAN IID (7 SEG)	T3F	WTR	11.0
TITAN IID (7 SEG)/BURNER II	T3F/B	WTR	17.4
TITAN IID (7 SEG)/CENTAUR/B-II	T3F/C/B	ETR	18.9
AGENA KICK STAGE	A	ETR	6.8
SPACE SHUTTLE	SHTL	ETR/ WTR	4.4
REUSABLE SPACE TUG	TUG	ETR/ WTR	0.5
EXPENDABLE SPACE TUG	TUG EXP	ETR	13.6

Table A-5. Direct Launch Vehicle Costs Space Transportation System, Case C-1

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCT	WTR	3.4
TAT (3C)/DELTA	TAT3/D	ETR	7.7
		WTR	6.9
TAT (3C)/DELTA/TE-364	TAT3/D/T	ETR	8.9
TAT (9C)/DELTA/TE-364	TAT9/D/T	ETR	8.7
		WTR	7.8
TITAN IIIB/AGENA	T3B/A	ETR	11.2
		WTR	11.2
TITAN IIIC	T3C	ETR	17.3
		WTR	17.9
TITAN IIID	T3D	WTR	12.3
TITAN IIID/CENTAUR	T3D/C	ETR	21.2
TITAN IIID (7 SEG)	T3F	WTR	11.1
TITAN IIID/(7 SEG)/CENTAUR/B-II	T3F/C/B	ETR	19.9
AGENA KICK STAGE	A	ETR	6.5
SPACE SHUTTLE	SHTL	ETR/ WTR	4.4
REUSABLE SPACE TUG	TUG	ETR/ WTR	0.5
EXPENDABLE SPACE TUG	TUG EXP	ETR	13.6

Table A-6. Direct Launch Vehicle Costs Space Transportation System, Case C-2

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCT	WTR	3.4
TAT (3C)/DELTA/TE-364	TAT3/D/T	WTR	10.6
TITAN IIB/CENTAUR	T3B/C	WTR	15.0
TITAN IIC	T3C	ETR	17.2
		WTR	22.0
TITAN IID	T3D	WTR	10.6
TITAN IID/CENTAUR	T3D/C	ETR	17.0
		WTR	17.1
TITAN IID (7 SEG)	T3F	WTR	11.2
TITAN IID (7 SEG)/CENTAUR/B-II	T3F/C/B	ETR	18.3
AGENA KICK STAGES	A	ETR	4.4
		WTR	4.6
CENTAUR KICK STAGES	C	ETR	6.3
		WTR	7.8
SPACE SHUTTLE	SHTL	ETR/ WTR	4.4
REUSABLE SPACE TUG	TUG	ETR/ WTR	0.5
EXPENDABLE SPACE TUG	TUG EXP	ETR	13.6

Table A-7. Direct Launch Vehicle Costs Space Transportation System, Case K

VEHICLE	SYMBOL	LAUNCH SITE	COST PER FLIGHT (\$ M, 1970)
SCOUT	SCT	WTR	3.4
TAT (3C)/DELTA/TE-364	TAT3/D/T	WTR	11.4
TITAN IIB/BURNER II	T3B/B	ETR	7.0
TITAN IIB/CENTAUR	T3B/C	ETR	14.0
		WTR	15.2
TITAN IIB/CENTAUR/BURNER-II	T3B/C/B	ETR	14.5
TITAN IIC	T3C	ETR	15.6
		WTR	16.8
TITAN IID	T3D	WTR	10.3
TITAN IID/CENTAUR	T3D/C	ETR	18.6
		WTR	18.4
TITAN IID (7 SEG)	T3F	WTR	10.8
TITAN IID (7 SEG)/BURNER-II	T3F/B	WTR	15.9
TITAN IID (7 SEG)/CENTAUR	T3F/C	ETR	17.8
TITAN IID (7 SEG)/CENTAUR/B-II	T3F/C/B	ETR	18.5
AGENA KICK STAGES	A	ETR	6.5
SPACE SHUTTLE	SHTL	ETR/ WTR	4.4
REUSABLE SPACE TUG	TUG	ETR/ WTR	0.5
EXPENDABLE SPACE TUG	TUG EXP	ETR	13.6

Table A-8. Methodology for Estimating Reliability Effects on System Costs

CATEGORY	LAUNCH VEHICLE	PROGRAM IMPLEMENTATION
LAUNCH VEHICLE ⁽⁴⁾ COST INCREASES	Expendable ⁽¹⁾ Launch Vehicle	a) Add 9% to all expendable Launch Vehicle Direct Operating Costs (DOC).
	Space Shuttle	a) Add 6.5% to all Space Shuttle DOC where Space Shuttle only is flown.
		b) Add 8.5% to all Space Shuttle DOC where Space Shuttle plus Space Tug is flown.
		c) Add 9% to all Space Shuttle DOC where Expendable Upper Stage is flown.
PAYLOAD ⁽⁴⁾ COST INCREASES	Space Tug	a) Add 8% to all Space Tug DOC where Expendable Upper Stage is not flown.
		b) Add 9% to all Space Tug DOC where Expendable Upper Stage is flown.
	Expendable ⁽¹⁾ Launch Vehicle	a) Add 9% to all payload unit costs except programs with backup payloads.
		b) Add 1 payload unit cost to all programs with less than 3 payloads. ⁽²⁾
	Space Shuttle ⁽³⁾	a) Add 1 payload unit cost to all planetary programs.

NOTES: (1)Includes expendable boosters and upper stages with Cases A, B, C, C-1, C-2, and K.
(2)For Cases A and B add 33 additional payloads.
For Case C, add 1 additional payload.
For Case C-1, no additional payload required.
For Case C-2, add 6 additional payloads.
For Case K, add 2 additional payloads.
(3)For Cases C, C-1, C-2, and K add 13 additional payloads.
(4)No losses on manned systems.

TABLE A-9
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C		
	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM
	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM	PAYLOAD LNCH VEH PROGRAM
	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT
PHYSICS AND ASTRONOMY									
ASTRONOMY EXPL	395	496	395	45	440	291	40	331	
RADIO EXPLORER	305	408	305	57	362	228	27	255	
M,SPHERE L-ETR	166	207	166	30	196	108	16	124	
M,SPHERE L-WTR	166	204	166	29	195	108	29	137	
M,SPHERE M-ETR	164	210	141	65	206	106	16	122	
M,SPHERE M-WTR	164	234	141	68	209	106	32	138	
M,SPHERE UPPER	323	415	282	131	413	251	85	337	
ORB SOLAR OBS	77	84	64	5	69	39	5	44	
GEN RELATIVITY A	147	160	116	10	126	82	7	89	
GEN RELATIVITY B	93	108	71	22	93	57	11	68	
RADIO INTERFER	473	491	473	17	490	387	5	392	
SOLAR ORBIT-A	146	173	146	22	168	126	11	137	
SOLAR ORBIT-B	156	183	156	22	178	136	11	147	
OPT INTERFER.A	214	228	214	8	222	178	3	181	
OPT INTERFER.B	109	123	109	8	117	73	3	76	
HEAD-C	1527	1609	1527	68	1595	1022	89	1111	
L S TELESCOPE	1072	1141	1072	57	1129	613	52	665	
LARGE SOLAR OB	1223	1293	1223	48	1271	738	42	780	
LARGE RADIO OB	805	846	805	34	839	577	26	603	
SUBTOTAL	7725	8613	7572	746	8318	5226	511	5737	
EARTH OBSERVATIONS									
POLAR EARTH OB	771	855	629	136	765	438	64	502	
SYNC EARTH OBS	276	345	220	39	259	164	27	191	
EARTH PHYSICS	217	261	186	34	220	147	29	176	
SYNC MET SAT	128	151	100	18	118	79	7	86	
TIROS	57	76	57	15	72	55	15	71	
POLAR ERS	315	357	255	34	289	211	23	234	
SYNC ERS	212	292	170	45	215	125	27	152	
SUBTOTAL	1976	2337	1617	321	1938	1219	193	1412	

TABLE A-9
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C		
	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM
	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD	PAYLOAD
	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL	TOTAL
SPACE STATION SUPPORT									
SPACE STATION	0	262	262	0	78	78	0	61	61
EXPT SUP CARGO	2764	2931	5695	2764	2925	5689	2504	286	2790
PHYSICS LAB	245	14	259	245	11	256	199	5	204
COSMIC RAY LAB	193	18	211	193	17	210	155	5	160
LIFE SCI LAB	227	36	263	227	35	262	142	9	151
EARTH OBS LAB	229	27	256	229	24	253	170	9	179
COMM/NAV LAB	306	27	333	306	23	329	185	9	194
SPACE MFG LAB	187	18	205	187	12	199	149	5	154
OMSF TOTAL	4151	3333	7484	4151	3125	7276	3504	389	3893
TOTAL NASA	19818	5772	25590	19117	5003	24120	14967	1798	16765
NON-NASA PROGRAMS									
COMSAT	119	151	270	119	64	183	82	58	140
DOMESTIC COMM	401	369	770	401	156	557	229	117	346
FOREIGN DOMES.	339	298	637	339	148	487	235	69	304
NAV TRFC CON A	100	97	197	100	77	177	83	50	133
NAV TRFC CON B	55	58	113	55	65	120	45	43	88
TOS MET SAT	250	76	326	250	59	309	173	70	243
SYNC MET SAT	270	137	407	218	111	329	185	63	248
POLAR ERS	883	153	1036	721	123	844	437	124	561
SYN EARTH RES	232	92	324	232	43	275	199	28	227
NONNASA TOTAL	2649	1431	4080	2435	846	3281	1668	622	2290
NASA AND NON-NASA TOTAL	22467	7203	29670	21552	5849	27401	16635	2420	19055

The DoD Programs portion of Table A-9
are contained in Volume VI, Classified
Addendum, pages III-A-16 and III-A-17.

TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	15	33	23	41	68	57	27	29	62	47	49	35	10	0
RADIO EXPLORER	0	0	0	0	22	69	66	17	10	50	70	31	14	5	12	29	13
M, SPHERE L-ETR	0	0	0	15	25	16	18	23	37	18	11	9	10	9	11	5	0
M, SPHERE L-WTR	0	0	0	0	15	25	16	17	23	37	18	10	9	10	9	11	4
M, SPHERE M-ETR	0	0	0	14	25	17	18	23	37	19	11	9	12	9	11	5	0
M, SPHERE M-WTR	0	0	0	0	15	27	19	20	25	40	20	13	12	13	11	14	5
M, SPHERE UPPER	0	0	5	5	31	43	36	52	52	36	29	36	37	22	20	14	2
OR8 SOLAR OBS	0	0	0	0	21	45	18	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	32	71	27	0	0	0	7	15	8
GEN RELATIVITY B	0	0	0	0	0	7	46	36	0	0	0	5	11	3	0	0	0
RADIO INTERFER	0	0	0	0	34	169	212	76	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	75	28	0	0	8	21	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	80	29	0	0	8	22	8	0
OPT INTERFER-A	0	0	0	0	0	0	0	0	0	0	0	0	55	125	48	0	0
OPT INTERFER-B	0	0	0	0	0	0	0	0	0	0	0	0	31	66	26	0	0
HEAD-C	0	38	107	161	152	128	162	160	134	100	95	84	95	80	82	30	0
L S TELESCOPE	0	0	0	28	82	128	136	103	98	89	97	90	97	82	79	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	240	265	144	118	101	118	102	113	37	0
LARGE RADIO OB	0	0	0	0	0	0	0	0	41	177	201	116	98	97	92	34	0
SUBTOTAL	0	38	107	238	455	697	843	835	880	963	783	566	647	678	599	252	32
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	24	72	77	88	109	95	64	67	82	58	44	44	34	7
SYNC EARTH OBS	0	0	0	0	15	32	34	50	28	23	31	49	28	22	14	15	4
EARTH PHYSICS	0	0	0	0	21	50	50	48	29	12	14	9	10	8	9	1	0
SYNC NET SAT	0	0	0	0	0	0	30	73	43	5	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	6	14	6	0	6	14	7	0	0	5	15	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	24	111	163	59	0	0	0
SYNC ERS	0	0	0	0	0	28	71	63	31	8	0	7	30	41	13	0	0
SUBTOTAL	0	0	0	24	108	193	287	349	216	118	150	265	289	174	85	65	14

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	8	49	88	121	110	86	149	131	65	56	52	83	74	17	0
SMALL ATS-A	0	0	0	14	45	41	46	55	44	37	45	56	44	36	37	28	6
SMALL ATS-B	0	0	0	14	42	37	42	53	40	33	43	52	40	34	33	26	5
COOP APPL-A	0	0	0	12	25	9	0	0	9	19	6	0	0	0	0	0	0
COOP APPL-B	0	0	0	0	0	0	11	22	8	0	0	0	0	8	15	6	0
MED NETWORK	0	0	0	33	73	26	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	42	93	34	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	49	117	100	80	81	80	81	80	81	77	56	17
TRK DATA RELAY	0	0	0	6	33	50	28	22	42	28	5	12	35	25	4	0	0
SUBTOTAL	0	0	8	127	348	426	388	338	372	329	244	257	251	267	240	133	28
PLANETARY																	
MARS VIKING	0	0	0	59	155	83	56	20	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	201	72
MARS SAMPL ORG	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	192	71
VENUS EXPL ORG	0	0	0	0	26	58	21	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	20	88	100	35	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	20	88	100	34	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	18	83	96	33	0	0
JUP PIONEER	0	0	0	0	0	0	17	89	66	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	55	124	47	0	0	0	0	0	0	0	0	0	0	0
JUP ORR PROBE	0	0	0	0	0	0	0	0	0	51	108	53	30	9	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	52	114	42	15	34	11	0
ASTEROID SURV	0	0	0	0	0	0	0	0	33	75	28	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	51	114	43	16	38	14	0	0	0	0	0
SUBTOTAL	0	0	0	124	305	208	233	323	197	230	326	233	155	169	350	404	143
OSSA TOTAL	0	38	115	513	1216	1524	1751	1845	1665	1640	1503	1321	1342	1288	1274	854	217

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	65	144	53	0	0	0	0	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	14	103	212	434	512	511	554	646	683	683	517	143
PHYSICS LAB	0	0	0	0	0	0	0	16	87	115	41	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	72	94	32	0
LIFE SCI LAB	0	0	0	0	0	13	70	90	30	0	15	33	12	0	0	0	0
EARTH OPS LAB	0	0	0	11	32	60	71	27	0	13	31	11	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	117	40	0	0	0	16	39	13
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	113	42
OMSF TOTAL	0	0	0	11	59	298	551	721	744	620	618	682	755	777	781	669	198
TOTAL NASA	0	38	115	524	1275	1822	2302	2566	2409	2260	2121	2003	2097	2065	2055	1523	415
NON-NASA PROGRAMS																	
COMSAT	0	0	0	15	33	30	18	17	32	30	18	5	12	32	23	5	0
DOMESTIC COMM	0	0	0	8	38	55	43	44	64	77	82	76	72	72	72	53	14
FOREIGN DOMES.	0	0	0	0	13	61	102	74	43	11	25	84	100	55	31	29	9
NAV TRFC CON A	0	0	0	15	41	32	25	14	10	8	11	8	10	9	10	4	0
NAV TRFC CON R	0	0	0	0	4	15	17	9	10	9	10	8	11	8	10	2	0
TOS MET SAT	0	0	0	9	22	23	28	34	27	23	28	33	27	24	23	19	6
SYNCH MET SAT	0	0	0	7	24	31	37	41	36	31	36	41	36	31	31	22	3
POLAR ERS	0	0	0	70	152	97	87	81	102	79	87	40	0	51	131	59	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	49	109	44	26	67	29	0	0
NONNASA TOTAL	0	0	0	124	327	344	357	314	324	317	406	339	294	349	360	193	32
NASA AND NON-NASA TOTAL	0	38	115	648	1602	2166	2659	2880	2733	2577	2527	2342	2391	2414	2415	1716	447

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The DoD Programs portion of Table A-10
are contained in Volume VI, Classified
Addendum, pages III- A-21 and III- A-22.

TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	13	28	21	38	61	50	24	27	56	43	41	29	9	0
RADIO EXPLORER	0	0	0	0	19	61	60	16	9	46	62	28	14	5	9	23	10
M,SPHERE L-ETR	0	0	0	14	25	15	17	22	36	17	10	8	10	8	10	4	0
M,SPHERE L-WTR	0	0	0	0	14	25	15	17	22	36	17	10	8	10	8	9	4
M,SPHERE M-ETR	0	0	0	16	23	17	19	22	32	16	12	10	12	10	12	5	0
M,SPHERE M-WTR	0	0	0	0	16	23	17	19	23	32	17	12	10	12	11	12	5
M,SPHERE UPPER	0	0	0	10	30	42	37	48	48	37	29	33	33	22	21	18	5
ORB SOLAR OBS	0	0	0	0	17	37	15	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	25	55	22	0	0	0	5	14	5
GEN RELATIVITY B	0	0	0	0	0	8	37	26	0	0	0	5	12	5	0	0	0
RADIO INTERFER	0	0	0	0	34	168	213	75	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	73	27	0	0	8	19	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	78	28	0	0	8	20	8	0
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	0	0	0	54	122	46	0	0
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	0	0	0	30	63	24	0	0
HEAD-C	0	38	107	161	150	127	160	160	133	98	94	83	94	80	80	30	0
L S TELESCOPE	0	0	0	28	82	128	134	102	96	89	96	88	96	81	77	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	239	262	141	115	99	115	99	110	36	0
LARGE RADIO OB	0	0	0	0	0	0	0	0	41	177	199	115	96	87	91	33	0
SUBTOTAL	0	38	107	242	438	672	817	807	846	919	755	547	627	661	572	241	29
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	22	64	69	78	93	75	59	59	70	53	41	41	33	8
SYNC EARTH OBS	0	0	0	0	11	26	26	37	22	18	24	36	21	17	10	10	1
EARTH PHYSICS	0	0	0	0	16	42	42	40	25	10	13	8	7	7	7	3	0
SYNC MET SAT	0	0	0	0	0	0	24	58	32	4	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	5	14	6	0	5	14	6	0	0	5	14	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	19	90	132	48	0	0	0
SYNC ERS	0	0	0	0	0	22	53	46	24	5	0	5	22	29	9	0	0
SUBTOTAL	0	0	0	22	91	164	237	280	178	101	129	215	235	142	72	60	12

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TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	0	45	84	110	110	83	142	124	61	51	50	83	73	16	0
SMALL ATS-A	0	0	0	18	38	36	37	46	38	32	38	47	38	35	32	25	5
SMALL ATS-B	0	0	0	17	36	35	37	45	37	30	37	45	36	31	32	23	5
COOP APPL-A	0	0	0	12	23	8	0	0	7	15	4	0	0	0	0	0	1
COOP APPL-B	0	0	0	0	0	0	10	23	8	0	0	0	0	0	7	15	5
MED NETWORK	0	0	0	29	63	23	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	36	81	29	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	45	104	85	62	65	63	65	63	65	60	44	13
TRK DATA RELAY	0	0	0	5	24	37	20	16	31	21	4	7	23	17	3	0	0
SUBTOTAL	0	0	0	126	304	383	347	298	325	287	207	215	210	238	215	113	24
PLANETARY																	
MARS VIKING	0	0	0	69	155	82	55	21	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	200	72
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	191	71
VENUS EXPL ORB	0	0	0	0	23	50	18	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	18	85	105	33	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	17	78	90	30	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	16	73	85	28	0	0
JUP PIONEER	0	0	0	0	0	0	14	76	55	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	54	123	48	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	51	108	52	29	10	0	0	0
ASTEROID SURV	0	0	0	0	0	0	0	0	0	0	52	114	41	15	33	12	0
COMET RENDEZ	0	0	0	0	0	0	0	0	33	73	27	0	0	0	0	0	0
SUBTOTAL	0	0	0	123	301	198	223	314	180	218	313	226	143	159	344	403	143
OSSA TOTAL	0	38	115	513	1134	1417	1624	1699	1529	1525	1404	1203	1215	1200	1203	817	208

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TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE 0 NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	10	21	8	0	10	21	8	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	14	103	212	434	511	511	552	646	682	682	517	143
PHYSICS LAB	0	0	0	0	0	0	0	16	87	113	40	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	72	94	31	0
LIFE SCI LAB	0	0	0	0	0	13	69	91	29	0	15	32	13	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	60	70	26	0	13	30	11	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	115	39	0	0	0	0	16	37
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	110	40
OMSF TOTAL	0	0	0	11	59	242	428	674	739	628	635	635	691	754	776	654	197
TOTAL NASA	0	38	115	524	1193	1659	2052	2373	2268	2153	2039	1894	1969	1976	1981	1481	405
NON-NASA PROGRAMS																	
COMSAT	0	0	0	12	25	21	12	10	21	19	12	12	3	8	22	15	3
DOMESTIC COMM	0	0	0	0	0	37	31	32	46	55	51	51	57	54	52	37	11
FOREIGN DOMES.	0	0	0	0	10	46	76	57	34	9	19	19	64	75	42	26	6
NAV TRFC CON A	0	0	0	11	31	27	21	12	11	9	11	9	9	11	8	11	5
NAV TRFC CON B	0	0	0	0	5	15	19	9	11	8	11	11	9	11	9	11	2
TOS MET SAT	0	0	0	0	21	22	27	32	26	22	26	26	31	26	22	22	18
SYNC MET SAT	0	0	0	4	18	25	29	31	27	26	28	28	35	30	27	27	19
POLAR ERS	0	0	0	55	124	79	71	67	84	65	71	71	33	0	41	107	47
SYN EARTH RES	0	0	0	0	0	0	0	0	0	43	95	95	39	21	54	23	0
NONNASA TOTAL	0	0	0	96	260	272	286	250	260	256	334	280	236	277	294	154	26
NASA AND NON-NASA TOTAL	0	38	115	520	1453	1931	2338	2623	2528	2409	2373	2174	2205	2253	2275	1635	431

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The DoD Programs portion of Table A-11
are contained in Volume VI, Classified
Addendum, pages III-A-26 and III-A-27.

TABLE A-12
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	11	25	22	27	44	36	22	20	34	27	25	27	11	0
RADIO EXPLORER	0	0	0	0	13	48	54	18	4	26	44	20	3	6	1	7	11
M, SPHERE L-ETR	0	0	1	9	15	13	11	16	22	13	4	6	3	5	4	3	0
M, SPHERE L-MTR	0	0	0	0	9	15	13	11	19	22	15	4	9	3	8	4	5
M, SPHERE M-ETR	0	0	0	9	15	13	11	16	22	13	4	6	3	5	2	3	0
M, SPHERE M-MTR	0	0	0	0	9	15	15	11	20	22	15	4	8	3	9	2	5
M, SPHERE UDDLR	0	0	0	0	29	38	39	37	40	30	22	24	25	15	15	12	5
ORR SOLAR OBS	0	0	0	0	9	21	14	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	17	39	18	0	0	0	1	7	7
GEN RELATIVITY B	0	0	0	0	0	4	24	25	0	0	0	2	5	8	0	0	0
RADIO INTERFER	0	0	0	0	34	142	156	60	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	25	56	26	0	0	5	13	12	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	28	61	27	0	0	5	14	12	0
OPT INTERFER-A	0	0	0	0	0	0	0	0	0	0	0	0	42	98	41	0	0
OPT INTERFER-B	0	0	0	0	0	0	0	0	0	0	0	0	18	39	19	0	0
HEAD-C	0	26	79	124	127	80	99	146	79	39	70	73	22	26	59	57	5
L S TELESCOPE	0	0	0	26	60	100	114	65	28	30	80	85	28	25	17	8	5
LARGE SOLAR OR	0	0	0	0	0	0	39	180	212	85	20	19	18	99	96	7	5
LARGE RADIO OR	0	0	0	0	0	0	0	0	41	173	189	83	32	35	26	16	8
SUBTOTAL	0	26	79	179	345	511	516	629	593	631	554	360	243	402	352	161	56
EARTH OBSERVATIONS																	
POLAR EARTH OR	0	0	0	23	64	50	50	64	49	35	33	43	25	17	18	19	12
SYNC EARTH OBS	0	0	0	0	9	18	22	29	17	9	20	25	19	9	6	2	6
EARTH PHYSICS	0	0	0	0	13	33	34	32	21	12	8	8	2	7	1	5	0
SYNC NET SAT	0	0	0	0	0	0	17	38	25	6	0	0	0	0	0	0	0
TIRDS	0	0	0	0	0	8	20	13	0	0	5	11	0	0	0	5	9
POLAR ERS	0	0	0	0	0	0	0	0	0	0	12	64	106	52	0	0	0
SYNC ERS	0	0	0	0	0	16	42	34	23	6	0	0	3	16	12	0	0
SUBTOTAL	0	0	0	23	86	125	185	210	135	68	78	151	155	101	37	31	27

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TABLE A-12
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
COMMUNICATION AND NAVIGATION																		
APPL TECH SAT	0	0	0	6	37	68	94	82	54	78	90	47	25	36	31	49	27	0
SMALL ATS-A	0	0	0	0	14	28	28	33	39	29	25	31	39	32	27	25	23	8
SMALL ATS-B	0	0	0	0	16	36	31	31	37	28	27	30	39	32	27	27	21	10
COOP APPL-A	0	0	0	0	7	11	8	0	0	4	9	7	0	0	0	0	0	0
COOP APPL-B	0	0	0	0	0	0	0	14	11	7	0	0	0	0	4	9	6	0
MED NETWORK	0	0	0	0	27	69	30	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	0	28	64	34	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	0	34	79	75	56	50	35	31	36	33	33	31	16
TRK DATA RELAY	0	0	0	0	3	24	35	14	13	15	20	7	0	6	20	6	0	0
SUBTOTAL	0	0	0	6	104	264	324	287	229	217	221	157	134	142	142	149	108	34
PLANETARY																		
MARS VIKING	0	0	0	0	62	154	94	57	23	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	129	185	105
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	117	177	104
MARS EXPL ORB	0	0	0	0	0	19	45	23	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	0	16	63	73	52	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	0	16	65	77	42	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	0	14	60	74	42	0	0
JUP PIONEER	0	0	0	0	0	0	0	9	59	68	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	0	52	125	53	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	0	43	100	62	23	19	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	0	42	103	63	10	23	25	0
ASTEROID SURV	0	0	0	0	0	0	0	0	0	27	67	35	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	0	43	104	52	13	30	18	0	0	0	0	0
SUBTOTAL	0	0	0	0	114	298	208	195	259	215	188	284	239	146	152	311	387	209
OSSA TOTAL	0	26	85	420	993	1168	1283	1327	1160	1108	1073	884	686	797	849	687	326	

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TABLE A-12
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	0	0	19	0	0	4	14	15	9	0	0
EXPT SUP CARGO	0	0	0	0	10	57	68	141	238	245	267	293	310	327	328	327	179
PHYSICS LAB	0	0	0	0	0	0	16	72	82	34	0	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	13	59	63	25	0	0
LIFE SCI LAB	0	0	0	0	10	45	52	23	0	0	9	12	0	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	49	43	23	0	0	9	12	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	12	58	68	28	0	0	0	0	0	12	16
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	82	35
OMSF TOTAL	0	0	0	11	52	151	191	336	388	307	289	344	384	399	390	421	230
TOTAL NASA	0	26	95	431	1045	1319	1474	1663	1548	1445	1362	1228	1070	1196	1239	1108	556
NON-NASA PROGRAMS																	
COMSAT	0	0	0	14	28	14	11	7	5	18	10	6	0	5	14	8	0
DOMESTIC COMM	0	0	0	5	18	33	29	18	16	39	33	29	25	26	27	28	20
FOREIGN DOMES.	0	0	0	0	7	35	34	45	21	12	3	18	39	34	13	14	9
NAV TRFC CON A	0	0	0	14	36	21	15	9	2	8	2	7	2	7	2	8	0
NAV TRFC CON B	0	0	0	0	5	15	21	8	4	7	2	7	2	7	2	8	0
TOS MET SAT	0	0	0	7	20	18	31	21	18	17	18	21	18	14	15	15	10
SYNC MET SAT	0	0	0	6	18	17	34	22	19	17	20	21	18	15	16	17	8
POLAR ERS	0	0	0	50	116	57	36	48	38	47	24	43	0	1	37	64	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	33	76	46	8	31	33	0	0
NONNASA TOTAL	0	0	0	96	248	210	231	178	123	198	188	198	112	140	159	162	47
NASA AND NON-NASA TOTAL	0	26	85	527	1293	1529	1705	1841	1671	1613	1550	1426	1182	1336	1398	1270	603

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The DoD Programs portion of Table A-12
are contained in Volume VI, Classified
Addendum, pages III-A-31 and III-A-32.

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTRONOMY EXPL
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C					CASE C					CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	PL	LV	TAT3	PL	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
RADIO EXPLORER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										CASE D TUG EXP									
	PL	LV	T39/	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	T39/	PL	LV	T39/	PL	LV	PROG	DIR	PL	LV	SHTL	LV	TUG	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1978	0	0.0	16	5	22	0	0	0	0	0	0	16	3	19	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1979	0	0.0	54	15	69	0	0	0	0	0	0	54	7	61	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1980	2	2.0	55	11	66	2	1.0	0	0	0	0	55	5	60	2	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1981	1	1.0	15	2	17	1	0.0	0	0	0	0	15	1	16	1	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1982	0	0.0	7	3	10	0	0	0	0	0	0	7	2	9	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1983	0	0.0	38	12	50	0	0	0	0	0	0	38	8	46	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1984	1	1.0	55	15	70	1	0.0	0	0	0	0	55	7	62	0	1	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1985	2	2.0	23	8	31	2	1.0	0	0	0	0	23	5	28	0	2	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1986	0	0.0	8	6	14	0	0	0	0	0	0	8	6	14	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1987	1	1.0	3	2	5	1	1.0	0	0	0	0	3	2	5	0	1	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1988	0	0.0	6	6	12	0	0	0	0	0	0	6	3	9	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1989	0	0.0	17	12	29	0	0	0	0	0	0	17	6	23	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
1990	2	2.0	8	5	13	2	0.0	0	0	0	0	8	2	10	0	2	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0		
TOTAL	9	9.0	305	103	408	9	3.0	.9	.5	305	57	362	3	6	0.0	0.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	0	228	27	255									

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE L-ETR
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										
	PL					LV					PL					LV					PL					LV					
	TAT3	TOT	LV	DIR	PROG	PL	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	0	0.0	13	2	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1978	0	0.0	22	3	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1979	1	1.0	13	3	16	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1980	0	0.0	14	4	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1981	1	1.0	20	3	23	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1982	0	0.0	33	4	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1983	1	1.0	15	3	18	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1984	0	0.0	7	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1985	1	1.0	6	3	9	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1986	0	0.0	7	3	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1987	1	1.0	6	3	9	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1988	0	0.0	7	4	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1989	1	1.0	3	2	5	1	1.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	6	6.0	166	41	207	6	6.0	0.0	0.0	0.0	0.0	166	30	196	1	5	0.0	0.0	0.0	3.0	3.0	0	108	16	124						

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M,SPHERE L-WIR
Ossa
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										EXP									
	PL					LV					PL					LV					PL					LV					LV					LV				
	TAT3	NO	NO	\$	\$	NO	NO	NO	NO	NO	TOT	LV	LV	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	13	2	15	0	0.0	0.0	0.0	0.0	13	1	14	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	22	3	25	0	0.0	0.0	0.0	0.0	22	3	25	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	13	3	16	1	1.0	0.0	0.0	0.0	13	2	15	1	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	14	3	17	0	0.0	0.0	0.0	0.0	14	3	17	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	20	3	23	1	1.0	0.0	0.0	0.0	20	2	22	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	33	4	37	0	0.0	0.0	0.0	0.0	33	3	36	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	15	3	18	1	1.0	0.0	0.0	0.0	15	2	17	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	7	3	10	0	0.0	0.0	0.0	0.0	7	3	10	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	6	3	9	1	1.0	0.0	0.0	0.0	6	2	8	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	7	3	10	0	0.0	0.0	0.0	0.0	7	3	10	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	6	3	9	1	1.0	0.0	0.0	0.0	6	2	8	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	7	4	11	0	0.0	0.0	0.0	0.0	7	2	9	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	3	1	4	1	1.0	0.0	0.0	0.0	3	1	4	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	6	6.0	166	38	204	6	6.0	0.0	0.0	0.0	166	29	195	1	5	0.0	0.0	0.0	0.0	0.0	0.0	5.5	5.5	0	108	29	137													

III, A 36

III-A-37

FY	CASE A CURRENT EXPEND. SYSTEM					CASE B NEW EXPENDABLE SYSTEM					CASE C SPACE TRANSPORTATION SYSTEM															
	PL		LV		PROG	PL		LV		PROG	PL		LV		PROG	PL		LV		PROG	PL		LV		PROG	
	TAT	DIR	TAT	DIR		TAT	DIR	TAT	DIR		TAT	DIR	TAT	DIR		TAT	DIR	TAT	DIR		TAT	DIR	TAT	DIR		TAT
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	12	2	14	0	0	0.0	0.0	0.0	13	3	16	0	0	0.0	0.0	0	0	0.0	0.0	0	9	0	0	0
1978	0	0.0	21	4	25	0	0	0.0	0.0	0.0	17	6	23	0	0	0.0	0.0	0	0	0.0	0.0	0	15	0	15	0
1979	1	1.0	13	4	17	1	1	0.0	0.0	0.0	12	5	17	1	0	0.0	0.0	.5	.5	.5	.5	0	10	3	13	13
1980	0	0.0	14	4	18	0	0	0.0	0.0	0.0	13	6	19	0	0	0.0	0.0	.5	.5	.5	.5	0	11	0	11	0
1981	1	1.0	20	3	23	1	1	0.0	0.0	0.0	17	5	22	0	1	0.0	0.0	.5	.5	.5	.5	0	14	2	16	16
1982	0	0.0	33	4	37	0	0	0.0	0.0	0.0	25	6	32	0	0	0.0	0.0	.5	.5	.5	.5	0	22	0	22	0
1983	1	1.0	15	4	19	1	1	0.0	0.0	0.0	12	4	16	0	1	0.0	0.0	.5	.5	.5	.5	0	10	3	13	13
1984	0	0.0	7	4	11	0	0	0.0	0.0	0.0	6	6	12	0	0	0.0	0.0	.5	.5	.5	.5	0	4	0	4	0
1985	1	1.0	5	3	9	1	1	0.0	0.0	0.0	5	5	10	0	1	0.0	0.0	.5	.5	.5	.5	0	3	3	6	6
1986	0	0.0	7	5	12	0	0	0.0	0.0	0.0	6	6	12	0	0	0.0	0.0	.5	.5	.5	.5	0	3	0	3	0
1987	1	1.0	6	3	9	1	1	0.0	0.0	0.0	5	5	10	0	1	0.0	0.0	.5	.5	.5	.5	0	3	2	5	5
1988	0	0.0	7	4	11	0	0	0.0	0.0	0.0	6	6	12	0	0	0.0	0.0	.5	.5	.5	.5	0	2	0	2	0
1989	1	1.0	3	2	5	1	1	0.0	0.0	0.0	3	2	5	0	1	0.0	0.0	.5	.5	.5	.5	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	.5	.5	.5	.5	0	0	0	0	0

TOTAL	6	5.0	164	46	210	6	6.0	0.0	0.0	141	65	206	1	5	0.0	0.0	3.0	0	106	16	122
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE M-WTR
OSSA
LAUNCHED FROM WTR

FY	CASE A				CASE B				CASE C			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1978	0	0.0	12	3	0	0.0	0	13	0	0.0	0	0
1979	0	0.0	21	6	0	0.0	0	17	0	0.0	0	0
1980	1	1.0	13	6	1	1.0	0	12	1	0.0	0	0
1981	0	0.0	14	6	0	0.0	0	13	0	0.0	0	0
1982	1	1.0	20	5	1	1.0	0	17	0	0.0	0	0
1983	0	0.0	33	7	0	0.0	0	26	0	0.0	0	0
1984	1	1.0	15	5	1	1.0	0	12	1	0.0	0	0
1985	0	0.0	7	6	0	0.0	0	5	0	0.0	0	0
1986	1	1.0	6	6	1	1.0	0	5	0	0.0	0	0
1987	0	0.0	7	6	0	0.0	0	6	0	0.0	0	0
1988	1	1.0	5	5	1	1.0	0	5	0	0.0	0	0
1989	0	0.0	7	7	0	0.0	0	6	0	0.0	0	0
1990	1	1.0	3	2	1	1.0	0	3	0	0.0	0	0

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE UPPER
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					
	PL	LV	TOT	DIR	PROG	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	
1977	0	0.0	3	2	5	0	0	0.0	0.0	0.0	7	3	10	0	0	0	0	0.0	0.0	0.0	0	2	4	6	2	4	6	2	4	6	2
1978	0	0.0	25	6	31	0	0	0.0	0.0	0.0	22	8	30	0	0	0	0.0	0.0	0.0	0	20	9	29	0	20	9	29	0	20	9	
1979	1	1.0	35	8	43	1	1	1.0	0.0	0.0	31	11	42	1	1	0	0.0	0.0	0.0	0	30	8	38	0	30	8	38	0	30	8	
1980	1	1.0	29	7	36	1	1	1.0	0.0	0.0	26	11	37	1	1	0	0.0	0.0	0.0	0	25	14	39	0	25	14	39	0	25	14	
1981	1	1.0	44	8	52	1	1	1.0	0.0	0.0	37	11	48	1	1	0	0.0	0.0	0.0	0	34	3	37	0	34	3	37	0	34	3	
1982	1	1.0	44	8	52	1	1	1.0	0.0	0.0	37	11	48	1	1	0	0.0	0.0	0.0	0	34	6	40	0	34	6	40	0	34	6	
1983	1	1.0	29	7	36	1	1	1.0	0.0	0.0	26	11	37	1	1	0	0.0	0.0	0.0	0	25	5	30	0	25	5	30	0	25	5	
1984	1	1.0	21	8	29	1	1	1.0	0.0	0.0	18	11	29	1	1	0	0.0	0.0	0.0	0	17	5	22	0	17	5	22	0	17	5	
1985	1	1.0	29	7	36	1	1	1.0	0.0	0.0	22	11	33	1	1	0	0.0	0.0	0.0	0	19	5	24	0	19	5	24	0	19	5	
1986	1	1.0	29	8	37	1	1	1.0	0.0	0.0	22	11	33	1	1	0	0.0	0.0	0.0	0	19	6	25	0	19	6	25	0	19	6	
1987	1	1.0	14	8	22	1	1	1.0	0.0	0.0	11	11	22	1	1	0	0.0	0.0	0.0	0	10	5	15	0	10	5	15	0	10	5	
1988	1	1.0	13	7	20	1	1	1.0	0.0	0.0	11	10	21	1	1	0	0.0	0.0	0.0	0	10	5	15	0	10	5	15	0	10	5	
1989	1	1.0	8	6	14	1	1	1.0	0.0	0.0	9	9	18	1	1	0	0.0	0.0	0.0	0	6	6	12	0	6	6	12	0	6	6	
1990	1	1.0	0	2	2	1	1	1.0	0.0	0.0	3	2	5	1	1	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	12	12.0	323	92	415	12	12.0	0.0	0.0	0.0	262	131	413	12	0	0	2.0	0.0	10.0	10.0	0	251	86	337	0	251	86	337	0	251	86

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ORB SOLAR OBS
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP						
	PL	LV	TOT	LV	PROG	PL	LV	LV	LV	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	19	2	21	0	0.0	0.0	0.0	0.0	16	1	17	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	9	0	9
1979	0	0.0	42	3	45	0	0.0	0.0	0.0	0.0	34	3	37	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	21	0	21
1980	1	1.0	16	2	18	1	1.0	0.0	0.0	0.0	14	1	15	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	9	5	14
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	6	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0

TOTAL 1 1.0 77 7 84 1 1.0 6.0 0.0 64 5 69 1 0 0.0 0.0 1.0 0.0 0 39 5 44

TABLE A-13

III-A-41

TOTAL

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GEN RELATIVITY B
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	PL	LV	TAT9	TOT	DIR	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-42

[illegible]41

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SOLAR ORBIT-A
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL LV	PL T3C	LV TOT DIR	PROG DIR	PL S/2/	LV LV	LV LV	LV LV	PL NEW REF	LV LV	LV LV	LV LV
NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO

1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1982	0	0.0	30	3	0	0.0	0.0	0.0	0	0	0.0	0.0
1983	0	0.0	57	8	0	0.0	0.0	0.0	0	0	0.0	0.0
1984	1	1.0	25	3	1	1.0	0.0	0.0	0	0	0.0	0.0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1986	0	0.0	5	3	0	0.0	0.0	0.0	0	0	0.0	0.0
1987	0	0.0	13	8	0	0.0	0.0	0.0	0	0	0.0	0.0
1988	0	0.0	6	2	0	0.0	0.0	0.0	0	0	0.0	0.0
1989	1	1.0	0	0	1	1.0	0.0	0.0	0	0	0.0	0.0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0

TOTAL	2	2.0	146	27	173	2	2.0	0.0	0.0	146	22	168
									2	0	0.0	0.0
										2.0	2.0	0
											126	11
												137

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SOLAR ORBIT-3
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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	PL	LV	T3C	TOT	DIR	PL	LV	5/2/ C/T	PL	LV	TOT	DIR	PL	LV	PL	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III. A. 45

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OPT INTERFER.B
LAUNCHED FROM ETR

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III-A-47

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
HEAO-C
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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III-A-48

III-A-49

47

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE SOLAR OR OSSA
LAUNCHED FROM ETR

[illegible]

III- A- 50

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE RADIO OR
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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III-A-51

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
POLAR EARTH OR
LAUNCHED FROM WTR

FY	CASE A										CASE B										CASE C											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					TUG						
	PL	LV	PL	LV	PL	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	TAT9	TOT	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG
	NO	NO	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1977	0	0.0	22	2	24	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1978	0	0.0	67	5	72	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1979	1	1.0	70	7	77	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1980	1	1.0	81	7	88	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1981	1	1.0	102	7	109	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1982	1	1.0	78	7	85	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1983	1	1.0	57	7	64	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1984	1	1.0	60	7	67	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1985	1	1.0	75	7	82	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1986	1	1.0	51	7	58	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1987	1	1.0	37	7	44	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1988	1	1.0	37	7	44	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1989	1	1.0	29	5	34	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1990	1	1.0	5	2	7	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	

TOTAL 12 12.0 771 84 855 12 12.0 0.0 0.0 629 136 765 2 10 1.0 0.0 10.0 0.0 0 439 64 502

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYNC EARTH OBS
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM							CASE C SPACE TRANSPORTATION SYSTEM										\$						
	PL LV 139/ C				PL LV 139/ C				PL LV 130/ C			PL LV 130/ C				PL LV 130/ C				PL LV 130/ C				PL LV 130/ C				
	NO	NO	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		NO	NO	NO	NO	\$	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	12	3	15	0	0.0	0.0	9	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1979	0	0.0	26	6	32	0	0.0	0.0	22	4	26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18
1980	1	1.0	29	5	34	1	.4	0.0	24	2	26	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22
1981	0	0.0	43	7	50	0	0.0	0.0	34	3	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29
1982	1	1.0	23	5	28	1	.3	0.0	19	3	22	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17
1983	0	0.0	17	5	23	0	0.0	0.0	14	4	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1984	1	1.0	26	5	31	1	0.0	.4	21	3	24	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15
1985	0	0.0	43	6	49	0	0.0	0.0	33	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20
1986	1	1.0	22	6	28	1	0.0	.4	18	3	21	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	25
1987	0	0.0	16	6	22	0	0.0	0.0	13	4	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19
1988	1	1.0	9	5	14	1	0.0	.4	7	3	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9
1989	0	0.0	9	6	15	0	0.0	0.0	5	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
1990	1	1.0	1	3	4	1	0.0	.4	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EARTH PHYSICS
OSSA
LAUNCHED FROM WTR

CASE A										CASE B										CASE C									
CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM																			
PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG	PL	LV	PL	LV	LV	LV	SHL	TUG	TUG	EXP	PL	LV	PL	LV	PROG					
TAT3	TOT	DIR	DIR		5/2/	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO					
/D																													
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0					
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0					
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0					
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0					
1978	0	0.0	19	2	21	0	0.0	0.0	0.0	15	1	16	0	0	0.0	0.0	0.0	0.0	0	13	0	13	0	13					
1979	0	0.0	45	5	50	0	0.0	0.0	0.0	38	4	42	0	0	0.0	0.0	0.0	0.0	0	33	0	33	0	33					
1980	1	1.0	44	6	50	1	1.0	0.0	0.0	37	5	42	1	0	0.0	0.0	.5	.5	0	31	3	34	0	34					
1981	1	1.0	42	6	48	1	1.0	0.0	0.0	35	5	40	1	0	0.0	0.0	.5	.5	0	30	2	32	0	32					
1982	1	1.0	24	5	29	1	1.0	0.0	0.0	21	4	25	1	0	0.0	0.0	1.0	0.0	0	16	5	21	0	21					
1983	1	1.0	9	3	12	1	1.0	0.0	0.0	8	2	10	0	1	0.0	0.0	1.0	0.0	0	7	5	12	0	12					
1984	0	0.0	11	3	14	0	0.0	0.0	0.0	10	3	13	0	0	0.0	0.0	0.0	0.0	0	8	0	8	0	8					
1985	1	1.0	6	3	9	1	1.0	0.0	0.0	6	2	8	0	1	0.0	0.0	1.0	0.0	0	4	4	4	0	4					
1986	0	0.0	6	4	10	0	0.0	0.0	0.0	5	2	7	0	0	0.0	0.0	0.0	0.0	0	2	0	2	0	2					
1987	1	1.0	5	3	8	1	1.0	0.0	0.0	4	3	7	0	1	0.0	0.0	1.0	0.0	0	2	5	7	0	7					
1988	0	0.0	6	3	9	0	0.0	0.0	0.0	5	2	7	0	0	0.0	0.0	0.0	0.0	0	1	0	1	0	1					
1989	1	1.0	0	1	1	1	1.0	0.0	0.0	2	1	3	0	1	0.0	0.0	1.0	0.0	0	0	0	5	0	5					
1990	0	0.0	6	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0					
TOTAL					7	7.0	217	44	261	7	7.0	0.0	0.0	0.0	186	34	220	3	4	0.0	0.0	6.0	1.0	0	147	29	176		

III-A-54

CASE A				CASE B				CASE C			
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
13B/	10T	DIR	DIR	5/2/	13D/	10T	DIR	NEW	REF	TUG	TUG
C				C/T	C					EXP	EXP

[illegible]

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TIPOS
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	PL					LV					PL					LV					PL					LV					PL					LV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	TAT3	TOT	DIR	PROG	DIR	PL	LV	3/2/	PL	LV	TOT	DIR	PROG	DIR	PL	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III. A-56

LAUNCHED FROM WTR

TOTAL	6	6.0	315	42	357	5	3.0	0.0	255	34	289	6	0	0.0	0.0	5.0	0.0	211	23	234
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					LAUNCHED FROM ETR					OSSA					LAUNCHED FROM ETR				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	25	3	28	0	0.0	0.0	0.0	29	2	2	2	2	22	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	59	12	71	0	0.0	0.0	0.0	47	6	6	6	53	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	45	18	63	1	.4	0.0	0.0	36	10	46	1	0	46	1	0	0.0	0.0	.7	0	30	4	34	0	0	0	0	0	0
1982	2	2.0	21	10	31	2	0.0	.7	0.0	17	7	24	2	0	24	2	0	0.0	0.0	1.7	0	14	9	23	0	0	0	0	0	0
1983	1	1.0	5	3	8	1	0.0	.4	0.0	4	1	5	1	0	5	1	0	0.0	0.0	.7	0	3	3	6	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	4	3	7	0	0.0	0.0	0.0	3	2	5	0	0	5	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	18	12	30	0	0.0	0.0	0.0	15	7	22	0	0	22	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	26	15	41	1	0.0	.4	0.0	21	8	29	0	1	29	0	1	0.0	0.0	1.0	0	10	6	16	0	0	0	0	0	0
1988	2	2.0	9	4	13	2	0.0	.7	0.0	7	2	9	0	2	9	0	2	0.0	0.0	1.0	0	7	5	12	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	7.0	212	80	292	7	.4	2.2	0.0	170	45	215	4	3	215	4	3	0.0	0.0	5.1	0	125	27	152	0	0	0	0	0	0

III-A-58

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
APPL TECH SAT
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	PROG	PL	LV	TOT	PROG	PL	LV	TOT	PROG
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	1	1	1	1	1	1	1	1	1	1	1
1980	0	0	0	0	0	0	0	0	0	0	0	0
1981	1	1	1	1	1	1	1	1	1	1	1	1
1982	0	0	0	0	0	0	0	0	0	0	0	0
1983	1	1	1	1	1	1	1	1	1	1	1	1
1984	1	1	1	1	1	1	1	1	1	1	1	1
1985	0	0	0	0	0	0	0	0	0	0	0	0
1986	1	1	1	1	1	1	1	1	1	1	1	1
1987	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	1	1	1	1	1	1	1	1	1	1	1
1989	1	1	1	1	1	1	1	1	1	1	1	1
1990	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	7	7	7	7	7	7	7	7	7	7	7

III. A-59

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TABLE 4-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-A
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	PL					LV					PL					LV					PL					LV					PL					LV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III. A-60

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-G
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1977	0	0.0	12	2	14	0	0.0	0.0	0.0	0.0	15	1	17	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1978	0	0.0	37	5	42	0	0.0	0.0	0.0	0.0	32	4	36	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1979	1	1.0	31	6	37	1	1.0	0.0	0.0	0.0	30	5	35	1	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1980	1	1.0	36	6	42	1	1.0	0.0	0.0	0.0	32	5	37	1	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1981	1	1.0	46	7	53	1	1.0	0.0	0.0	0.0	40	5	45	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1982	1	1.0	34	6	40	1	1.0	0.0	0.0	0.0	31	6	37	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1983	1	1.0	27	6	33	1	1.0	0.0	0.0	0.0	26	4	30	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1984	1	1.0	36	7	43	1	1.0	0.0	0.0	0.0	32	5	37	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1985	1	1.0	46	6	52	1	1.0	0.0	0.0	0.0	40	5	45	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1986	1	1.0	34	6	40	1	1.0	0.0	0.0	0.0	31	5	36	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1987	1	1.0	27	7	34	1	1.0	0.0	0.0	0.0	26	5	31	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1988	1	1.0	27	6	33	1	1.0	0.0	0.0	0.0	26	6	32	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1989	1	1.0	21	5	25	1	0.0	0.0	0.0	0.0	20	3	23	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1990	1	1.0	4	1	5	1	1.0	0.0	0.0	0.0	4	1	5	0	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
TOTAL	12	12.0	418	76	494	12	10.0	1.0	0.0	0.0	395	60	446	2	10	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-A OSHA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM																
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		
	138/ C	TOT	DIR	PROG	5/2/ C	T3D/ C	TOT	DIR	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
1974	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	9	3	12	0.0	0.0	9	3	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	7	0	7	0
1978	0	0.0	19	6	25	0.0	0.0	17	6	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	11	0	11	8
1979	1	1.0	7	2	9	1.0	0.0	5	2	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	4	4	0	0
1980	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1982	0	0.0	6	3	9	0.0	0.0	6	1	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	4
1983	0	0.0	12	7	19	0.0	0.0	12	3	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	9	0	9	0
1984	1	1.0	4	2	6	1.0	0.0	3	1	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	4	3	7	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	1	0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-B
LAUNCHED FROM NTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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III, A-63

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MED NETWORK
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										CASE D LAUNCHED FROM ETR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EDUC BROADCAST
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM												CASE D EXP			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	REF	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/	130/
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0.0	0	0	0	0
1978	0	0.0	33	9	42	0	0.0	0.0	33	3	36	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979	0	0.0	74	19	93	0	0.0	0.0	74	7	81	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	2	2.0	27	7	34	2	.7	0.0	27	2	29	2	0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	2	2.0	134	35	169	2	.7	0.0	134	12	146	2	0	0.0	0.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYSTEM DEMO
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM												
	PL					LV					PL					LV					PL					LV							
	T3C	NO	NO	\$	\$	T3C	NO	NO	\$	\$	TOT DIR	LV	LV	LV	LV	NO	NO	NO	\$	\$	NEW REF	LV	LV	LV	TUG	TUG	TOT DIR	LV	LV	LV	EXP		
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1979	0	0.0	42	7	43	0	0.0	0.0	0.0	42	3	45	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1980	0	0.0	95	22	117	0	0.0	0.0	0.0	95	9	104	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	34
1981	2	2.0	73	27	109	2	0.0	0.0	0.0	73	12	85	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	79
1982	2	2.0	52	28	83	2	0.0	0.0	0.0	52	10	62	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	65
1983	2	2.0	54	27	81	2	0.0	0.0	0.0	54	11	65	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	49
1984	2	2.0	52	28	80	2	0.0	0.0	0.0	52	11	63	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	40
1985	2	2.0	54	27	81	2	0.0	0.0	0.0	54	11	65	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	24
1986	2	2.0	52	28	80	2	0.0	0.0	0.0	52	11	63	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	26
1987	2	2.0	54	27	81	2	0.0	0.0	0.0	54	11	65	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	25
1988	2	2.0	49	26	77	2	0.0	0.0	0.0	49	11	50	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	26
1989	2	2.0	36	20	56	2	0.0	0.0	0.0	36	8	44	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	22
1990	2	2.0	11	6	17	2	0.0	0.0	0.0	11	2	13	2	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	21
TOTAL	20	20.0	624	275	899	20	6.5	0.0	0.0	624	110	734	8	12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	419	90
																																	509

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1979 DOLLARS)
TRK DATA RELAY
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV PROG									
	PL	LV	T3C	TOT DIR	PROG DIR	PL	LV	LV	T30/13F/	LV	LV	PL	TOT DIR	LV	LV	PL	LV	LV	LV	LV	LV	LV	TUG	TUG	TUG	TOT DIR	LV	LV	PROG DIR	
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1977	0	0.0	3	3	6	0	0.0	0.0	0.0	0.0	0.0	3	2	5	0	0	0.0	0.0	0.0	0.0	0.0	0	3	0	0	0	0	0	0	3
1978	0	0.0	18	15	33	0	0.0	0.0	0.0	0.0	0.0	18	6	24	0	0	0.0	0.0	0.0	0.0	0.0	0	24	0	0	0	0	0	0	24
1979	1	1.0	29	21	50	1	.4	0.0	0.0	0.0	0.0	29	8	37	1	0	0.0	0.0	0.0	0.0	0.0	0	24	0	0	0	0	0	0	35
1980	2	2.0	15	13	28	2	0.0	.6	0.0	0.0	0.0	15	5	20	2	0	0.0	0.0	0.0	0.0	0.0	0	9	0	0	0	0	0	0	14
1981	1	1.0	12	10	22	1	.3	0.0	0.0	0.0	0.0	12	4	16	0	1	0.0	0.0	0.0	0.0	0.0	0	8	0	0	0	0	0	0	13
1982	0	0.0	24	18	42	0	0.0	0.0	0.0	0.0	0.0	24	7	31	0	0	0.0	0.0	0.0	0.0	0.0	0	15	0	0	0	0	0	0	15
1983	2	2.0	15	13	28	2	0.0	.6	0.0	0.0	0.0	15	6	21	1	1	0.0	0.0	0.0	0.0	0.0	0	9	0	0	0	0	0	0	20
1984	1	1.0	2	3	5	1	.4	0.0	0.0	0.0	0.0	2	2	4	0	0	0.0	0.0	0.0	0.0	0.0	0	2	0	0	0	0	0	0	7
1985	0	0.0	5	7	12	0	0.0	0.0	0.0	0.0	0.0	5	2	7	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1986	0	0.0	16	19	35	0	0.0	0.0	0.0	0.0	0.0	16	7	23	0	0	0.0	0.0	0.0	0.0	0.0	0	6	0	0	0	0	0	0	6
1987	2	2.0	12	13	25	2	0.0	.6	0.0	0.0	0.0	12	5	17	0	2	0.0	0.0	0.0	0.0	0.0	0	9	0	0	0	0	0	0	20
1988	1	1.0	2	2	4	1	0.0	.3	0.0	0.0	0.0	2	1	3	0	1	0.0	0.0	0.0	0.0	0.0	0	2	0	0	0	0	0	0	6
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS VIKING
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										CASE D LAUNCH SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
	PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL					LV					T3D/ C					PL				

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS SAMPLE LOR
OSSA
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C				CASE D				CASE E				CASE F				CASE G				CASE H				CASE I				CASE J				CASE K				CASE L				CASE M				CASE N				CASE O				CASE P				CASE Q				CASE R				CASE S				CASE T				CASE U				CASE V				CASE W				CASE X				CASE Y				CASE Z				CASE AA				CASE AB				CASE AC				CASE AD				CASE AE				CASE AF				CASE AG				CASE AH				CASE AI				CASE AJ				CASE AK				CASE AL				CASE AM				CASE AN				CASE AO				CASE AP				CASE AQ				CASE AR				CASE AS				CASE AT				CASE AU				CASE AV				CASE AW				CASE AX				CASE AY				CASE AZ				CASE BA				CASE BB				CASE BC				CASE BD				CASE BE				CASE BF				CASE BG				CASE BH				CASE BI				CASE BJ				CASE BK				CASE BL				CASE BM				CASE BN				CASE BO				CASE BP				CASE BQ				CASE BR				CASE BS				CASE BT				CASE BU				CASE BV				CASE BW				CASE BX				CASE BY				CASE BZ				CASE CA				CASE CB				CASE CC				CASE CD				CASE CE				CASE CF				CASE CG				CASE CH				CASE CI				CASE CJ				CASE CK				CASE CL				CASE CM				CASE CN				CASE CO				CASE CP				CASE CQ				CASE CR				CASE CS				CASE CT				CASE CU				CASE CV				CASE CW				CASE CX				CASE CY				CASE CZ				CASE DA				CASE DB				CASE DC				CASE DD				CASE DE				CASE DF				CASE DG				CASE DH				CASE DI				CASE DJ				CASE DK				CASE DL				CASE DM				CASE DN				CASE DO				CASE DP				CASE DQ				CASE DR				CASE DS				CASE DT				CASE DU				CASE DV				CASE DW				CASE DX				CASE DY				CASE DZ				CASE EA				CASE EB				CASE EC				CASE ED				CASE EE				CASE EF				CASE EG				CASE EH				CASE EI				CASE EJ				CASE EK				CASE EL				CASE EM				CASE EN				CASE EO				CASE EP				CASE EQ				CASE ER				CASE ES				CASE ET				CASE EU				CASE EV				CASE EW				CASE EX				CASE EY				CASE EZ				CASE FA				CASE FB				CASE FC				CASE FD				CASE FE				CASE FF				CASE FG				CASE FH				CASE FI				CASE FJ				CASE FK				CASE FL				CASE FM				CASE FN				CASE FO				CASE FP				CASE FQ				CASE FR				CASE FS				CASE FT				CASE FU				CASE FV				CASE FW				CASE FX				CASE FY				CASE FZ				CASE GA				CASE GB				CASE GC				CASE GD				CASE GE				CASE GF				CASE GG				CASE GH				CASE GI				CASE GJ				CASE GK				CASE GL				CASE GM				CASE GN				CASE GO				CASE GP				CASE GQ				CASE GR				CASE GS				CASE GT				CASE GU				CASE GV				CASE GW				CASE GX				CASE GY				CASE GZ				CASE HA				CASE HB				CASE HC				CASE HD				CASE HE				CASE HF				CASE HG				CASE HH				CASE HI				CASE HJ				CASE HK				CASE HL				CASE HM				CASE HN				CASE HO				CASE HP				CASE HQ				CASE HR				CASE HS				CASE HT				CASE HU				CASE HV				CASE HW				CASE HX				CASE HY				CASE HZ				CASE IA				CASE IB				CASE IC				CASE ID				CASE IE				CASE IF				CASE IG				CASE IH				CASE II				CASE IJ				CASE IK				CASE IL				CASE IM				CASE IN				CASE IO				CASE IP				CASE IQ				CASE IR				CASE IS				CASE IT				CASE IU				CASE IV				CASE IW				CASE IX				CASE IY				CASE IZ				CASE JA				CASE JB				CASE JC				CASE JD				CASE JE				CASE JF				CASE JG				CASE JH				CASE JI				CASE JJ				CASE JK				CASE JL				CASE JM				CASE JN				CASE JO				CASE JP				CASE JQ				CASE JR				CASE JS				CASE JT				CASE JU				CASE JV				CASE JW				CASE JX				CASE JY				CASE JZ				CASE KA				CASE KB				CASE KC				CASE KD				CASE KE				CASE KF				CASE KG				CASE KH				CASE KI				CASE KJ				CASE KK				CASE KL				CASE KM				CASE KN				CASE KO				CASE KP				CASE KQ				CASE KR				CASE KS				CASE KT				CASE KU				CASE KV				CASE KW				CASE KX				CASE KY				CASE KZ				CASE LA				CASE LB				CASE LC				CASE LD				CASE LE				CASE LF				CASE LG				CASE LH				CASE LI				CASE LJ				CASE LK				CASE LL				CASE LM				CASE LN				CASE LO				CASE LP				CASE LQ				CASE LR				CASE LS				CASE LT				CASE LU				CASE LV				CASE LW				CASE LX				CASE LY				CASE LZ				CASE MA				CASE MB				CASE MC				CASE MD				CASE ME				CASE MF				CASE MG				CASE MH				CASE MI				CASE MJ				CASE MK				CASE ML				CASE MN				CASE MO				CASE MP				CASE MQ				CASE MR				CASE MS				CASE MT				CASE MU				CASE MV				CASE MW				CASE MX				CASE MY				CASE MZ				CASE NA				CASE NB				CASE NC				CASE ND				CASE NE				CASE NF				CASE NG				CASE NH				CASE NI				CASE NJ				CASE NK				CASE NL				CASE NM				CASE NN				CASE NO				CASE NP				CASE NQ				CASE NR				CASE NS				CASE NT				CASE NU				CASE NV				CASE NW				CASE NX				CASE NY				CASE NZ				CASE OA				CASE OB				CASE OC				CASE OD				CASE OE				CASE OF				CASE OG				CASE OH				CASE OI				CASE OJ				CASE OK				CASE OL				CASE OM				CASE ON				CASE OO				CASE OP				CASE OQ				CASE OR				CASE OS				CASE OT				CASE OU				CASE OV				CASE OW				CASE OX				CASE OY				CASE OZ				CASE PA				CASE PB				CASE PC				CASE PD				CASE PE				CASE PF				CASE PG				CASE PH				CASE PI				CASE PJ				CASE PK				CASE PL				CASE PM				CASE PN				CASE PO				CASE PP				CASE PQ				CASE PR				CASE PS				CASE PT				CASE PU				CASE PV				CASE PW				CASE PX				CASE PY				CASE PZ				CASE QA				CASE QB				CASE QC				CASE QD				CASE QE				CASE QF				CASE QG				CASE QH				CASE QI				CASE QJ				CASE QK				CASE QL				CASE QM				CASE QN				CASE QO				CASE QP				CASE QQ				CASE QR				CASE QS				CASE QT				CASE QU				CASE QV				CASE QW				CASE QX				CASE QY				CASE QZ				CASE RA				CASE RB				CASE RC				CASE RD				CASE RE				CASE RF				CASE RG				CASE RH				CASE RI				CASE RJ				CASE RK				CASE RL				CASE RM				CASE RN				CASE RO				CASE RP				CASE RQ				CASE RR				CASE RS				CASE RT				CASE RU				CASE RV				CASE RW				CASE RX				CASE RY				CASE RZ				CASE SA				CASE SB				CASE SC				CASE SD				CASE SE				CASE SF				CASE SG				CASE SH				CASE SI				CASE SJ				CASE SK				CASE SL				CASE SM				CASE SN				CASE SO				CASE SP				CASE SQ				CASE SR				CASE SS				CASE ST				CASE SU				CASE SV				CASE SW				CASE SX				CASE SY				CASE SZ				CASE TA				CASE TB				CASE TC				CASE TD				CASE TE				CASE TF				CASE TG				CASE TH				CASE TI				CASE TJ				CASE TK				CASE TL				CASE TM				CASE TN				CASE TO				CASE TP				CASE TQ				CASE TR				CASE TS				CASE TT				CASE TU				CASE TV				CASE TW				CASE TX				CASE TY				CASE TZ				CASE UA				CASE UB				CASE UC				CASE UD				CASE UE				CASE UF				CASE UG				CASE UH				CASE UI				CASE UJ				CASE UK				CASE UL				CASE UM				CASE UN				CASE UO				CASE UP				CASE UQ				CASE UR				CASE US				CASE UT				CASE UV				CASE UW				CASE UX				CASE UY				CASE UZ				CASE VA				CASE VB				CASE VC				CASE VD				CASE VE				CASE VF				CASE VG				CASE VH				CASE VI				CASE VJ				CASE VK				CASE VL				CASE VM				CASE VN				CASE VO				CASE VP				CASE VQ				CASE VR				CASE VS				CASE VT				CASE VU				CASE VV				CASE VW				CASE VX				CASE VY				CASE VZ				CASE WA				CASE WB				CASE WC				CASE WD				CASE WE				CASE WF				CASE WG				CASE WH				CASE WI				CASE WJ				CASE WK				CASE WL				CASE WM				CASE WN				CASE WO				CASE WP				CASE WQ				CASE WR				CASE WS				CASE WT				CASE WU				CASE WV				CASE WW				CASE WX				CASE WY				CASE WZ				CASE XA				CASE XB				CASE XC				CASE XD				CASE XE				CASE XF				CASE XG				CASE XH				CASE XI				CASE XJ				CASE XK				CASE XL				CASE XM				CASE XN				CASE XO				CASE XP				CASE XQ				CASE XR				CASE XS				CASE XT				CASE XU				CASE XV				CASE XW				CASE XX				CASE XY				CASE XZ				CASE YA				CASE YB				CASE YC				CASE YD				CASE YE				CASE YF				CASE YG				CASE YH				CASE YI				CASE YJ				CASE YK				CASE YL				CASE YM				CASE YN				CASE YO				CASE YP				CASE YQ				CASE YR				CASE YS				CASE YT				CASE YU				CASE YV				CASE YW				CASE YX				CASE YY				CASE YZ				CASE ZA				CASE ZB				CASE ZC				CASE ZD				CASE ZE				CASE ZF				CASE ZG				CASE ZH				CASE ZI				CASE ZJ				CASE ZK				CASE ZL				CASE ZM				CASE ZN				CASE ZO				CASE ZP				CASE ZQ				CASE ZR				CASE ZS				CASE ZT				CASE ZU				CASE ZV				CASE ZW				CASE ZX				CASE ZY				CASE ZZ			
	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MAPS SAMPL ORR
LAUNCHED FROM ETR

Fiscal Year	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										\$	%																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
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	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO			NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III A 70

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS EXPL ORB
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	24	2	26	0	0.0	0.0	0.0	0.0	29	3	23	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	52	6	58	0	0.0	0.0	0.0	0.0	44	6	50	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	19	2	21	1	1.0	0.0	0.0	0.0	16	2	18	1	0	0	1.0	0.0	1.0	1.0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	1.0	95	10	105	1	1.0	0.0	0.0	0.0	80	11	91	1	0	1.0	0.0	1.0	1.0	1.0	0	74	13	87						

III-A-21

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS MAPPING OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM			
	PL		LV		PL		LV		PL		LV	
	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1979	0	0.0	20	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1980	0	0.0	84	4	0	0.0	0.0	0.0	0	0	0.0	0.0
1981	0	0.0	90	10	0	0.0	0.0	0.0	0	0	0.0	0.0
1982	1	1.0	31	4	1	1.0	0.0	0.0	1	0	0.0	0.0
1983	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1984	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1988	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1989	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0

III-A-73

71

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 2
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										CASE D CASE E																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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III, A-74

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP PIONEER
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	SHL	TUG	TUG	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III-A-75

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM												LAUNCHED FROM ETR					
	PL LV T3F/ C/B				PL LV T3F/ C/B				PL LV T3F/ C/B				PL LV T3F/ C/B				PL LV T3F/ C/B				PL LV T3F/ C/B					
	NO	NO	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$	\$	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	45	10	55	0	0.0	0.0	0.0	45	9	54	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	42	10	52	0
1978	0	0.0	103	21	124	0	0.0	0.0	0.0	103	20	123	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	102	23	125	0
1979	2	2.0	40	7	47	2	2.0	0.0	0.0	40	8	48	2	0	2.0	0.0	0.0	0	0	0.0	0.0	0	45	8	53	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0
TOTAL	2	2.0	188	38	226	2	2.0	0.0	0.0	198	37	225	2	0	2.0	0.0	0.0	0	0	0.0	0.0	0	189	41	230	0

III-A-76

III-A-76

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP ORB PROBE
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM															
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV	
	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	44	9	53	1	1.0	0.0	0.0	46	5	51	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	19	11	30	0	0	0.0	0.0	98	10	108	0	0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	6	3	9	1	1.0	0.0	0.0	44	8	52	1	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0.0	0.0	19	10	29	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0.0	0.0	5	4	10	1	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

III-A-77

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
URANUS TOPS
OSSA
LAUNCHED FROM ETR

A-FY	CASE A										CASE B										CASE C									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1984	0	0.0	47	5	52	0	0.0	0.0	0.0	0.0	47	5	52	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1985	0	0.0	104	10	114	0	0.0	0.0	0.0	0.0	104	10	114	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1986	1	1.0	38	4	42	1	1.0	0.0	0.0	0.0	38	3	41	1	0.0	0.0	0.0	0.0	0.0	0.0	1	1.0	0.0	0.0	1	1.0	0.0	0.0	0.0	0
1987	0	0.0	10	5	15	0	0.0	0.0	0.0	0.0	10	5	15	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1988	0	0.0	23	11	34	0	0.0	0.0	0.0	0.0	23	10	33	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1989	1	1.0	8	3	11	1	1.0	0.0	0.0	0.0	8	4	12	1	0.0	0.0	0.0	0.0	0.0	0.0	1	1.0	0.0	0.0	1	1.0	0.0	0.0	0.0	0
1990	0	0.0	6	0	6	0	0.0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
TOTAL	2	2.0	230	38	268	2	2.0	0.0	0.0	0.0	230	37	267	2	0	0.0	0.0	0.0	0.0	0.0	2	2.0	0.0	0.0	2	2.0	0.0	0.0	0.0	0

III-A-78

III-A-79

TOTAL	1	1.0	122	14	136	1	1.0	0.0	122	11	133	1	0	0.0	0.0	1.0	1.0	0	124	5	129
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMET RENDEZ
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM										CASE D LAUNCHED FROM ETR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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III-A.80

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE STATION
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				EXP							
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1979	0	0.0	0	65	0	0.0	0	10	0	0.0	0	10	0	0.0	0	0	0	0.0	0	0
1980	0	0.0	0	144	0	0.0	0	21	0	0.0	0	21	0	0.0	0	0	0	0.0	0	0
1981	0	1.0	0	53	0	1.0	0	8	0	0.0	0	8	0	0.0	0	0	0	0.0	0	19
1982	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1983	0	0.0	0	0	0	0.0	0	10	0	0.0	0	10	0	0.0	0	0	0	0.0	0	0
1984	0	0.0	0	0	0	0.0	0	21	0	0.0	0	21	0	0.0	0	0	0	0.0	0	0
1985	0	0.0	0	0	0	1.0	0	8	0	0.0	0	8	0	0.0	0	0	0	0.0	0	4
1986	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	14
1987	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	15
1988	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	9
1989	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1990	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0

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TOTAL 0 1.0 0 262 262 0 2.0 0.0 0.0 0 78 78 0 0 0.0 0.0 0 0 0.0 0.0 0 61 61

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EXPT SUP CARGO OMSF
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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TOTAL 65 65.0 2764 2931 5595 55 65.0 0.0 0.0 2764 2925 5589 4 61 0.0 0.0 65.0 0.0 0 2504 286 2790

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LIFE SCI LAB
OMSF
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP															
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	
1978	0	0.0	13	0	13	0	0.0	0.0	0.0	0.0	13	0	0.0	0.0	0.0	13	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	10	10	10
1979	0	0.0	65	5	70	0	0.0	0.0	0.0	0.0	65	4	0.0	0.0	0.0	69	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	45	0	45	45
1980	0	0.0	81	9	90	0	0.0	0.0	0.0	0.0	81	10	0.0	0.0	0.0	91	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	52	0	52	52
1981	1	1.0	26	4	30	1	1.0	0.0	0.0	0.0	26	3	0.0	0.0	0.0	29	1	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	18	5	23	23
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	10	5	15	0	0.0	0.0	0.0	0.0	10	5	0.0	0.0	0.0	15	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	23	10	33	0	0.0	0.0	0.0	0.0	23	9	0.0	0.0	0.0	32	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	9	0	9	9
1985	1	1.0	9	3	12	1	1.0	0.0	0.0	0.0	9	4	0.0	0.0	0.0	13	0	1	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	8	4	12	12
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0

III-A-85

III A-85

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EARTH OBS LAB
OMSF
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1977	0	0.0	11	0	11	0	0.0	0.0	0.0	0.0	11	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	11	0	11	0	11
1978	0	0.0	32	0	32	0	0.0	0.0	0.0	0.0	32	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	32	0	32	0	32
1979	0	0.0	57	3	60	0	0.0	0.0	0.0	0.0	57	3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	49	0	49	0	49
1980	0	0.0	63	8	71	0	0.0	0.0	0.0	0.0	53	7	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	43	0	43	0	43
1981	1	1.0	24	3	27	1	1.0	0.0	0.0	0.0	24	2	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	18	5	23	0	23
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1983	0	0.0	10	3	13	0	0.0	0.0	0.0	0.0	10	3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1984	0	0.0	23	8	31	0	0.0	0.0	0.0	0.0	23	7	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	9	0	9	0	9
1985	1	1.0	9	2	11	1	1.0	0.0	0.0	0.0	9	2	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	8	4	12	0	12
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0
TOTAL	2	2.0	229	27	256	2	2.0	0.0	0.0	0.0	229	24	253	1	1	1	0.0	0.0	2.0	0.0	0	0.0	0.0	0	170	9	179			

III-A-86

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
PHYSICS LAB
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM															
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV	
	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR	T3C	DIR
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1980	0	0.0	16	0	16	0.0	0.0	16	0	16	0.0	0.0	16	0	16	0.0	0.0	16	0	16	0.0	0.0	16	0
1981	0	0.0	84	3	87	0.0	0.0	84	3	87	0.0	0.0	84	3	87	0.0	0.0	84	3	87	0.0	0.0	84	3
1982	0	0.0	107	8	115	0.0	0.0	107	6	113	0	0	107	6	113	0	0	107	6	113	0	0	107	6
1983	1	1.0	38	3	41	1	1.0	38	2	40	1	0	38	2	40	1	0	38	2	40	1	0	38	2
1984	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COSMIC RAY LAB
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMM/NAV LAB OMSF
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM					CASE B NEW EXPENDABLE SYSTEM					CASE C SPACE TRANSPORTATION SYSTEM					CASE D PL LV PROG											
	PL		LV		DIR	PL		LV		DIR	PL		LV		DIR	PL		LV		DIR	PL		LV		DIR		
	NO	\$	NO	\$		NO	\$	NO	\$		NO	\$	NO	\$		NO	\$	NO	\$		NO	\$	NO	\$		NO	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1980	0	0.0	18	0	18	0	0.0	0.0	0.0	18	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1981	0	0.0	87	3	90	0	0.0	0.0	0.0	87	3	90	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1982	0	0.0	109	8	117	0	0.0	0.0	0.0	109	6	115	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1983	1	1.0	37	3	40	1	1.0	0.0	0.0	37	2	39	1	0	0.0	0	0.0	0.0	1.0	0.0	0	0	0.0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1988	0	0.0	13	3	15	0	0.0	0.0	0.0	13	3	16	0	0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1989	0	0.0	31	8	39	0	0.0	0.0	0.0	31	6	37	0	0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0
1990	1	1.0	11	2	13	1	1.0	0.0	0.0	11	3	14	0	1	0.0	0	0.0	0.0	1.0	0.0	0	0	0.0	0.0	0	0	0

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE MFG LAB
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C				SPACE TRANSPORTATION SYSTEM												EXP			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				NEW EXPENDABLE SYSTEM				NEW EXPENDABLE SYSTEM				NEW EXPENDABLE SYSTEM				NEW EXPENDABLE SYSTEM				NEW EXPENDABLE SYSTEM			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1981	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1982	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1983	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1984	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1985	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1986	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1987	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1988	0	0.0	46	4	50	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1989	0	0.0	103	10	113	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0.0	0	0	0
1990	1	1.0	38	4	42	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	1	1.0	187	18	205	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

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LAUNCHED FROM ETR

TOTAL	11	11.0	119	151	270	11	1.8	1.0	1.3	119	64	183	3	8	.7	0.0	8.1	8.1	0	82	58	140
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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
DOMESTIC COMM LAUNCHED FROM ETR
NON NASA

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM														
	PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV				
	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR	T39/ C	TOT	DIR	PROG	DIR
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	4	4	8	0	0.0	0.0	0.0	0.0	4	2	6	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	5	5
1978	0	0.0	19	19	38	0	0.0	0.0	0.0	0.0	19	7	26	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	18	0	18
1979	1	1.0	28	27	55	1	.4	0.0	0.0	0.0	28	9	37	1	0	0	0.0	0.0	0.0	1.0	1	0	1.0	1.0	0	0	1.0	1.0	0	28	5	33	29	29	
1980	2	2.0	22	21	43	2	.7	0.0	0.0	0.0	22	9	31	2	0	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	18	11	18	11	18	
1981	1	1.0	22	22	44	1	.4	0.0	0.0	0.0	22	10	32	1	0	0	0.0	0.0	0.0	1.0	1	0	1.0	1.0	0	0	1.0	1.0	0	7	11	18	11	18	
1982	1	1.0	32	32	64	1	0.0	.5	0.0	0.0	32	14	46	0	1	0	0.0	0.0	0.0	1.0	1	0	1.0	1.0	0	0	1.0	1.0	0	11	5	16	16	16	
1983	2	2.0	42	35	77	2	0.0	1.0	0.0	0.0	42	13	55	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	28	11	39	39	39	
1984	2	2.0	47	35	82	2	.7	0.0	0.0	0.0	47	14	61	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	23	10	33	33	33	
1985	2	2.0	41	35	76	2	0.0	0.0	0.0	0.0	41	16	57	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	18	11	29	29	29	
1986	2	2.0	37	35	72	2	0.0	1.0	0.0	0.0	37	17	54	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	15	10	25	25	25	
1987	2	2.0	37	35	72	2	0.0	1.0	0.0	0.0	37	15	52	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	15	11	26	26	26	
1988	2	2.0	37	35	72	2	0.0	1.0	0.0	0.0	37	15	52	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	16	11	27	27	27	
1989	2	2.0	26	27	53	2	.7	0.0	0.0	0.0	26	11	37	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	18	10	28	28	28	
1990	2	2.0	7	7	14	2	0.0	1.0	0.0	0.0	7	4	11	0	2	0	0.0	0.0	0.0	2.0	2	0	2.0	2.0	0	0	2.0	2.0	0	9	11	20	20	20	

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON A
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					TUG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	PL	LV	TOT	DIR	PROG	PL	LV	5/2/	LV	NO	PL	LV	TOT	DIR	PROG	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL	LV	NO	LV	NO	PL

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON B
NON NASA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C SPACE TRANSPORTATION SYSTEM												\$																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	A				C				C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	PL	LV	TOT	DIR	PL	LV	5/2/	TOT	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV		LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-93

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TOS MET SAT
NON NASA
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C SPACE TRANSPORTATION SYSTEM																			
	PL					LV					PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$										
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0									
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0									
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0									
1977	0	0.0	7	2	9	0	0.0	0.0	0.0	7	1	8	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	4	3	7									
1978	0	0.0	17	5	22	0	0.0	0.0	0.0	17	4	21	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	5	20									
1979	1	1.0	17	6	23	1	1.0	0.0	0.0	17	5	22	1	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0	15	3									
1980	1	1.0	22	5	26	1	1.0	0.0	0.0	22	5	27	1	0	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	26	5	31									
1981	1	1.0	27	7	34	1	1.0	0.0	0.0	27	5	32	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	16	5	21									
1982	1	1.0	21	6	27	1	1.0	0.0	0.0	21	5	26	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	13	5	18									
1983	1	1.0	17	6	23	1	1.0	0.0	0.0	17	5	22	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	11	6	17									
1984	1	1.0	21	7	28	1	1.0	0.0	0.0	21	5	26	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	13	5	18									
1985	1	1.0	27	6	33	1	1.0	0.0	0.0	27	4	31	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	16	5	21									
1986	1	1.0	21	6	27	1	1.0	0.0	0.0	21	5	26	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	12	6	18									
1987	1	1.0	17	7	24	1	1.0	0.0	0.0	17	5	22	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	9	5	14									
1988	1	1.0	17	5	23	1	1.0	0.0	0.0	17	5	22	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	10	5	15									
1989	1	1.0	14	5	19	1	1.0	0.0	0.0	14	4	18	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	9	6	15									
1990	1	1.0	5	1	6	1	1.0	0.0	0.0	5	1	6	0	1	0	0	0.0	0.0	0.0	1	0	0	0	0	0	1.0	1.0	0	5	5	10									
TOTAL	12	12.0	250	76	326	12	12.0	0.0	0.0	250	59	309	2	10	1.0	0.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	173	70	243									

III-A-94

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LAUNCHED FROM ETR
NON NASA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C					CASE C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	PL	LV	TOT	DIR	PROG	PL	LV	LV	LV	LV	PL	TOT	DIR	PROG	PL	LV	LV	LV	LV	LV	PL	TOT	DIR	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-95

TABLE A-13		INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)	
		POLAR ERS	NON NASA
		LAUNCHED FROM WTR	
1960	1969	1960	1969
1970	1979	1970	1979
1980	1989	1980	1989
1990	1999	1990	1999
2000	2009	2000	2009
2010	2019	2010	2019
2020	2029	2020	2029
2030	2039	2030	2039
2040	2049	2040	2049
2050	2059	2050	2059
2060	2069	2060	2069
2070	2079	2070	2079
2080	2089	2080	2089
2090	2099	2090	2099
2100	2109	2100	2109
2110	2119	2110	2119
2120	2129	2120	2129
2130	2139	2130	2139
2140	2149	2140	2149
2150	2159	2150	2159
2160	2169	2160	2169
2170	2179	2170	2179
2180	2189	2180	2189
2190	2199	2190	2199
2200	2209	2200	2209
2210	2219	2210	2219
2220	2229	2220	2229
2230	2239	2230	2239
2240	2249	2240	2249
2250	2259	2250	2259
2260	2269	2260	2269
2270	2279	2270	2279
2280	2289	2280	2289
2290	2299	2290	2299
2300	2309	2300	2309
2310	2319	2310	2319
2320	2329	2320	2329
2330	2339	2330	2339
2340	2349	2340	2349
2350	2359	2350	2359
2360	2369	2360	2369
2370	2379	2370	2379
2380	2389	2380	2389
2390	2399	2390	2399
2400	2409	2400	2409
2410	2419	2410	2419
2420	2429	2420	2429
2430	2439	2430	2439
2440	2449	2440	2449
2450	2459	2450	2459
2460	2469	2460	2469
2470	2479	2470	2479
2480	2489	2480	2489
2490	2499	2490	2499
2500	2509	2500	2509
2510	2519	2510	2519
2520	2529	2520	2529
2530	2539	2530	2539
2540	2549	2540	2549
2550	2559	2550	2559
2560	2569	2560	2569
2570	2579	2570	2579
2580	2589	2580	2589
2590	2599	2590	2599
2600	2609	2600	2609
2610	2619	2610	2619
2620	2629	2620	2629
2630	2639	2630	2639
2640	2649	2640	2649
2650	2659	2650	2659
2660	2669	2660	2669
2670	2679	2670	2679
2680	2689	2680	2689
2690	2699	2690	2699
2700	2709	2700	2709
2710	2719	2710	2719
2720	2729	2720	2729
2730	2739	2730	2739
2740	2749	2740	2749
2750	2759	2750	2759
2760	2769	2760	2769
2770	2779	2770	2779
2780	2789	2780	2789
2790	2799	2790	2799
2800			

[illegible]

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYN EARTH RES
LAUNCHED FROM ETR
NON NASA

FY	CASE A										CASE B										CASE C									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV				
	PL	LV	TOT	LV	PROG	PL	LV	5/2/	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	NO	NO	\$	\$	\$	NO	NO	NO	NO	\$	\$	\$	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1983	0	0.0	38	11	49	0	0.0	0.0	0.0	38	5	43	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	33	0	0	0	33	0
1984	0	0.0	83	26	109	0	0.0	0.0	0.0	83	12	95	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	76	0	0	0	76	0
1985	4	4.0	35	9	44	4	.5	1.0	0.0	35	4	39	4	0.0	0.0	4	0.0	0.0	2.6	2.6	0	0	0	0	32	14	0	0	46	0
1986	0	0.0	15	11	26	0	0.0	0.0	0.0	15	6	21	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	8	0	0	0	8	0
1987	0	0.0	42	25	67	0	0.0	0.0	0.0	42	12	54	0	0.0	0.0	0	0.0	0.0	2.6	2.6	0	0	0	0	31	0	0	0	31	0
1988	4	4.0	19	10	29	4	1.3	0.0	0.0	19	4	23	2	0.0	0.0	2	0.0	0.0	2.6	2.6	0	0	0	0	19	14	0	0	33	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0

TOTAL 8 8.0 232 92 324 8 1.9 1.0 0.0 232 43 275 5 2 0.0 0.0 5.2 5.2 0 199 28 227

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The DoD Programs portion of Table A-13
are contained in Volume VI, Classified
Addendum, pages III-A-98 through III-A-116.

TABLE A-14
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A		CASE B			CASE C-1		
	CURRENT EXPENDABLE SYSTEM		NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM		
	PAYLOAD	LNCH VEH PROGRAM	PAYLOAD	LNCH VEH PROGRAM	TOTAL	PAYLOAD	LNCH VEH PROGRAM	TOTAL
	TOTAL	DIRECT	TOTAL	DIRECT	DIRECT	TOTAL	DIRECT	DIRECT
PHYSICS AND ASTRONOMY								
ASTRONOMY EXPL	395	496	395	45	440	297	42	329
RADIO EXPLORER	305	408	305	57	362	222	27	249
M, SPHERE L-ETR	166	207	166	30	196	106	22	128
M, SPHERE L-WTR	166	204	166	29	195	105	29	134
M, SPHERE M-ETP	164	210	141	65	206	103	25	128
M, SPHERE M-WTR	164	234	141	68	209	102	32	134
M, SPHERE UPPER	323	415	282	131	413	313	73	386
ORB SOLAR OBS	77	84	64	5	69	53	5	58
GEN RELATVY A	147	150	116	10	126	105	9	114
GEN RELATVY B	93	108	71	22	93	84	15	99
RADIO INTERFER	473	491	473	17	490	387	5	392
SOLAR ORBIT-A	146	173	146	22	168	126	11	137
SOLAR ORBIT-B	156	183	156	22	178	136	11	147
OPT INTERFER. A	214	228	214	8	222	178	3	181
OPT INTERFER. B	109	123	109	8	117	73	3	76
HEAD-C	1527	1509	1527	68	1595	1022	94	1116
L S TELESCOPE	1072	1141	1072	57	1129	613	52	665
LARGE SOLAR OB	1223	1293	1223	48	1271	738	40	778
LARGE RADIO OB	805	946	805	34	839	577	30	607
SUBTOTAL	7725	8613	7572	746	8318	5330	528	5858
EARTH OBSERVATIONS								
POLAR EARTH OB	771	355	629	136	765	478	61	539
SYNC EARTH OBS	276	345	220	39	259	190	22	212
EARTH PHYSICS	217	261	186	34	220	165	30	195
SYNC MET SAT	128	151	100	18	118	113	9	122
TIROS	57	76	57	15	72	55	11	66
POLAR ERS	315	357	255	34	289	300	14	314
SYNC ERS	212	292	170	45	215	164	22	186
SUBTOTAL	1976	2737	1617	321	1938	1465	169	1634

TABLE A-14
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C-1		
	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM
	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM	PAYLOAD LUNCH VEH PROGRAM
	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT	TOTAL DIRECT
COMMUNICATION AND NAVIGATION									
APPL TECH SAT	961	127	1088	961	87	1048	635	74	709
SMALL ATS-A	418	116	534	386	79	465	309	50	359
SMALL ATS-B	418	75	494	386	60	446	309	58	367
COOP APPL-A	57	23	80	54	16	70	37	9	46
COOP APPL-B	57	13	70	57	11	68	48	5	53
MED NETWORK	105	27	132	105	10	115	91	24	115
EDUC BROADCAST	134	35	169	134	12	146	115	11	126
SYSTEM DEMO	624	275	899	624	110	734	423	130	553
TRK DATA RELAY	153	137	290	153	55	208	112	62	174
SUBTOTAL	2927	829	3756	2860	440	3390	2079	423	2502
PLANETARY									
MARS VIKING	348	35	383	348	34	382	349	46	395
MARS SAMPL LDR	410	36	446	410	35	445	410	34	444
MARS SAMPL ORB	386	36	422	386	35	421	386	34	420
VENUS EXPL ORB	95	10	105	80	11	91	93	5	98
VENUS MAPPING	225	18	243	197	44	241	225	5	230
VENUS LANDER 1	224	18	242	198	17	215	223	5	228
VENUS LANDER 2	212	18	230	185	17	202	212	5	217
JUP PIONEER	137	35	172	111	34	145	137	25	162
GRAND TOUR	188	38	226	188	37	225	189	43	232
JUP ORB PROBE	213	38	251	213	37	250	212	34	246
URANUS TOPS	230	38	268	230	37	267	229	37	266
ASTEROID SURV	122	14	136	122	11	133	124	5	129
COMET RENDEZ	249	27	276	249	22	271	249	11	260
SUBTOTAL	3039	361	3400	2917	371	3288	3038	289	3327
OSSA TOTAL	15667	2439	18106	14966	1878	16844	11912	1409	13321

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TABLE A-14
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C-1		
	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM	CURRENT EXPENDABLE SYSTEM	NEW EXPENDABLE SYSTEM	SPACE TRANSPORTATION SYSTEM
	PAYLOAD	LNCH VEH PROGRAM	PAYLOAD	LNCH VEH PROGRAM	PAYLOAD	LNCH VEH PROGRAM	PAYLOAD	LNCH VEH PROGRAM	PAYLOAD
	TOTAL	DIRECT	TOTAL	DIRECT	TOTAL	DIRECT	TOTAL	DIRECT	TOTAL
SPACE STATION SUPPORT									
SPACE STATION	0	262	0	78	0	78	0	75	75
EXPT SUP CARGO	2764	5695	2764	2925	2764	5689	2504	286	2790
PHYSICS LAB	245	259	245	11	245	256	199	9	208
COSMIC RAY LAB	193	211	193	17	193	210	155	5	160
LIFE SCI LAB	227	263	227	35	227	262	142	19	161
EARTH OBS LAB	229	256	229	24	229	253	170	19	189
COMM/NAV LAB	306	333	306	23	306	329	185	14	199
SPACE MFG LAB	187	205	187	12	187	199	149	5	154
OMSE TOTAL	4151	7484	4151	3125	4151	7276	3504	432	3936
TOTAL NASA	19818	25590	19117	5003	19117	24120	15416	1841	17257
NON-NASA PROGRAMS									
COMSAT	119	270	119	64	119	183	73	39	112
DOMESTIC COMM	401	770	401	156	401	557	231	135	366
FOREIGN DOMES	339	637	339	148	339	487	235	69	304
NAV TRFC CON A	100	197	100	77	100	177	77	37	114
NAV TRFC CON B	55	113	55	65	55	120	40	32	72
TOS MET SAT	250	326	250	59	250	309	173	61	234
SYNC MET SAT	270	407	218	111	218	329	185	62	247
POLAR ERS	883	1036	721	123	721	844	593	81	674
SYN EARTH RES	232	324	232	43	232	275	199	23	222
NONNASA TOTAL	2649	4080	2435	846	2435	3281	1806	539	2345
NASA AND NON-NASA TOTAL	22467	29670	21552	5849	21552	27401	17222	2380	19602

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The DoD Programs portion of Table A-14
are contained in Volume VI, Classified
Addendum, pages III-A-120 and III-A-121.

TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1973 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	15	33	23	41	68	57	27	29	62	47	49	35	10	0
RADIO EXPLORER	0	0	0	0	22	69	66	17	16	50	70	31	14	5	12	29	13
M,SPHERE L-ETR	0	0	0	15	25	16	18	23	37	18	11	9	10	9	11	5	0
M,SPHERE L-MTR	0	0	0	0	15	25	16	17	23	37	18	10	9	10	9	11	4
M,SPHERE M-ETR	0	0	0	14	25	17	18	23	37	19	11	9	12	9	11	5	0
M,SPHERE M-MTR	0	0	0	0	15	27	19	20	25	40	20	13	12	13	11	14	5
M,SPHERE UPPER	0	0	0	5	31	43	36	52	52	36	29	36	37	22	20	14	2
ORR SOLAR OBS	0	0	0	0	21	45	18	0	0	0	0	1	0	0	0	0	0
GEN RELATIVITY	0	0	0	0	0	0	0	0	32	71	27	0	0	0	7	15	8
GEN RELATIVITY 2	0	0	0	0	0	7	46	36	0	0	0	5	11	3	0	0	0
RADIO INTERFER	0	0	0	0	34	169	212	76	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	75	26	0	0	8	21	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	80	29	0	0	8	22	8	0
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	0	0	0	0	125	48	0	0
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	0	0	0	0	31	66	26	0
HEAD-C	0	38	187	151	152	128	162	163	134	100	95	84	96	80	82	30	0
L S TELESCOPE	0	0	0	28	82	128	136	103	98	89	97	90	97	82	79	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	240	265	144	118	101	119	102	113	37	0
LARGE RADIO OB	0	0	0	0	0	0	0	0	41	177	201	116	98	87	92	34	0
SUBTOTAL	0	38	197	238	455	697	843	935	880	963	783	566	647	678	599	252	32
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	24	72	77	88	109	65	64	67	82	58	44	44	34	7
SYNC EARTH OBS	0	0	0	0	15	32	34	50	28	23	31	49	28	22	14	15	4
EARTH PHYSICS	0	0	0	0	21	50	30	48	29	12	14	9	13	8	9	1	0
SYNC MET SAT	0	0	0	0	0	0	50	73	43	5	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	6	14	6	0	6	14	7	0	0	5	15	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	24	111	163	59	0	0	0
SYNC ERS	0	0	0	0	0	28	71	63	31	8	0	7	30	41	13	0	0
SUBTOTAL	0	0	0	24	108	193	287	349	216	118	150	265	289	174	85	65	14

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	8	48	88	121	110	86	149	131	65	56	52	33	74	17	0
SMALL ATS-A	0	0	0	14	45	41	46	55	44	37	45	56	44	36	37	28	6
SMALL ATS-B	0	0	0	14	42	37	42	53	40	33	43	52	40	34	33	26	5
COOP APPL-A	0	0	0	12	25	9	9	9	9	19	6	0	0	0	0	0	0
COOP APPL-B	0	0	0	6	0	0	11	22	8	0	0	0	0	8	15	6	0
MED NETWORK	0	0	0	33	73	26	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	42	93	34	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	49	117	106	80	81	80	81	80	81	77	56	17
TRK DATA RELAY	0	0	0	6	33	50	28	22	42	28	5	12	35	25	4	0	0
SUBTOTAL	0	0	8	127	348	426	338	338	372	329	244	257	251	267	240	133	28
PLANETARY																	
MARS VIKING	0	0	0	69	155	83	56	20	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	201	72
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	192	71
VENUS EXPL ORB	0	0	0	0	26	58	21	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	20	88	100	35	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	20	88	130	34	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	18	83	96	33	0	0
JUP PIONEER	0	0	0	0	0	0	17	89	66	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	55	124	47	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	51	108	53	30	9	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	52	114	42	15	34	11	0
ASTEROID SURV	0	0	0	0	0	0	0	0	33	75	28	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	51	114	43	16	38	14	0	0	0	0	0
SUBTOTAL	0	0	0	124	305	208	233	323	197	230	326	233	155	169	350	404	143
OSSA TOTAL	0	38	115	513	1216	1524	1751	1845	1665	1640	1503	1321	1342	1298	1274	854	217

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	65	144	53	0	0	0	0	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	0	14	103	212	434	512	511	554	646	683	683	517
PHYSICS LAB	0	0	0	0	0	0	0	16	87	115	41	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	13	72	94	32
LIFE SCI LAB	0	0	0	0	0	0	13	70	90	30	6	15	33	12	0	0	0
EARTH OBS LAB	0	0	0	0	0	0	32	60	71	27	0	13	31	11	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	117	40	0	0	0	0	16	39
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	113
OMSF TOTAL	0	0	0	11	59	298	551	721	744	620	618	682	755	777	781	669	198
TOTAL NASA	0	38	115	524	1275	1822	2332	2566	2409	2260	2121	2003	2097	2065	2055	1523	415
NON-NASA PROGRAMS																	
COMSAT	0	0	0	15	33	30	18	17	32	30	18	5	12	32	23	5	0
DOMESTIC COMM	0	0	0	8	38	55	43	44	64	77	82	76	72	72	72	53	14
FOREIGN DOMES.	0	0	0	0	13	61	102	74	43	11	25	84	100	55	31	29	9
NAV TRFC CON A	0	0	0	15	41	32	25	14	10	8	11	8	10	9	10	4	0
NAV TRFC CON B	0	0	0	0	4	15	17	9	10	9	10	8	11	8	10	2	0
TOS MET SAT	0	0	0	9	22	23	28	34	27	23	28	33	27	24	23	19	6
SYNC MET SAT	0	0	0	7	24	31	37	41	36	31	36	41	36	31	31	22	3
POLAR ERS	0	0	0	70	152	97	87	81	102	79	87	40	0	51	131	59	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	49	109	44	26	67	29	0	0
NONNASA TOTAL	0	0	0	124	327	344	357	314	324	317	406	339	294	349	360	193	32
NASA AND NON-NASA TOTAL	0	38	115	648	1602	2166	2659	2880	2733	2577	2527	2342	2391	2414	2415	1716	447

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The DoD Programs portion of Table A-10
are contained in Volume VI, Classified
Addendum, pages III-A-125 and III-A-126.

TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	13	28	21	38	61	50	24	27	56	43	41	29	9	0
RADIO EXPLORER	0	0	0	0	19	61	60	16	9	46	62	28	14	5	9	23	10
M, SPHERE L-ETR	0	0	0	14	25	15	17	22	36	17	10	8	13	8	10	4	0
M, SPHERE L-WTR	0	0	0	0	14	25	15	17	22	36	17	10	8	10	8	9	4
M, SPHERE M-ETR	0	0	0	16	23	17	19	22	32	16	12	10	12	10	12	5	0
M, SPHERE N-WTR	0	0	0	0	16	23	17	19	23	32	17	12	13	12	11	12	5
M, SPHERE UPPER	0	0	0	10	30	42	37	48	48	37	29	33	33	22	21	18	5
ORB SOLAR OBS	0	0	0	0	17	37	15	0	0	0	0	0	0	0	0	0	0
GEN RELATVITY A	0	0	0	0	0	0	0	0	25	55	22	0	0	0	5	14	5
GEN RELATVITY B	0	0	0	0	0	8	37	26	0	0	0	5	12	5	0	0	0
RADIO INTERFER	0	0	0	0	34	168	213	75	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	73	27	0	0	0	19	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	78	28	0	0	8	20	8	0
OPT INTERFER-A	0	0	0	0	0	0	0	0	0	0	0	0	54	122	46	0	0
OPT INTERFER-B	0	0	0	0	0	0	0	0	0	0	0	0	33	63	24	0	0
HEAD-C	0	38	107	161	150	127	160	160	133	98	94	83	94	80	80	30	0
L S TELESCOPE	0	0	0	28	82	128	134	102	96	89	96	88	96	81	77	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	239	262	141	115	99	115	99	110	36	0
LARGE RADIO OB	0	0	0	0	0	0	0	0	41	177	199	115	96	87	91	33	0
SUBTOTAL	0	38	107	242	438	672	817	807	846	919	755	547	627	661	572	241	29
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	22	64	69	78	93	75	59	59	70	53	41	41	33	8
SYNC EARTH OBS	0	0	0	0	11	26	26	37	22	18	24	36	21	17	10	10	1
EARTH PHYSICS	0	0	0	0	16	42	42	40	25	10	13	8	7	7	7	3	0
SYNC MET SAT	0	0	0	0	0	0	24	58	32	4	0	0	3	0	0	0	0
TIROS	0	0	0	0	0	5	14	6	0	5	14	6	0	0	5	14	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	19	90	132	48	0	0	0
SYNC ERS	0	0	0	0	0	22	53	45	24	5	0	5	22	29	9	0	0
SUBTOTAL	0	0	0	22	91	164	237	280	178	101	129	215	235	142	72	60	12

TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	8	45	84	118	110	83	142	124	61	51	50	83	73	16	0
SMALL ATS-A	0	0	0	18	38	36	37	46	38	32	38	47	38	35	32	25	5
SMALL ATS-B	0	0	0	17	36	35	37	45	37	30	37	45	36	31	32	23	5
COOP APPL-A	0	0	0	12	23	8	0	0	7	15	4	0	0	0	0	0	1
COOP APPL-B	0	0	0	0	0	0	10	23	8	0	0	0	0	7	15	5	0
MED NETWORK	0	0	0	29	63	23	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	36	41	29	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	45	164	85	62	65	63	65	63	65	60	44	13
TRK DATA RELAY	0	0	0	5	24	37	20	16	31	21	4	7	23	17	3	0	0
SUBTOTAL	0	0	8	126	304	383	347	298	325	287	207	215	210	238	215	113	24
PLANETARY																	
MARS VIKING	0	0	0	69	155	82	55	21	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	200	72
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	191	71
VENUS EXPL ORB	0	0	0	0	23	50	18	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	18	85	105	33	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	17	78	90	30	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	16	73	85	28	0	0
JUP PIONEER	0	0	0	0	0	0	14	76	55	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	54	123	48	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	51	108	52	29	10	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	52	114	41	15	33	12	0
ASTEROID SURV	0	0	0	0	0	0	0	0	33	73	27	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	51	112	42	16	36	14	0	0	0	0	0
SUBTOTAL	0	0	0	123	301	198	223	314	180	218	313	226	143	159	344	403	143
OSSA TOTAL	0	38	115	513	1134	1417	1624	1699	1529	1525	1404	1203	1215	1200	1203	817	208

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TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	10	21	8	0	10	21	8	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	14	103	212	434	511	511	552	646	682	582	517	143
PHYSICS LAB	0	0	0	0	0	0	0	16	87	113	40	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	72	94	31	0
LIFE SCI LAB	0	0	0	0	0	13	69	91	29	0	15	32	13	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	60	70	26	0	13	30	11	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	115	39	0	0	0	16	37	14
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	110	40
OMSF TOTAL	0	0	0	11	59	242	428	674	739	628	635	691	754	776	778	664	197
TOTAL NASA	0	38	115	524	1193	1659	2052	2373	2268	2153	2039	1894	1969	1976	1981	1481	405
NON-NASA PROGRAMS																	
COMSAT	0	0	0	12	25	21	12	12	10	21	19	12	3	8	22	15	3
DOMESTIC COMM	0	0	0	6	26	37	31	31	32	46	55	61	57	54	52	37	11
FOREIGN DOMES.	0	0	0	0	10	46	76	57	57	34	9	19	64	75	42	26	6
NAV TRFC CON A	0	0	0	11	31	27	21	12	12	11	9	11	9	11	8	11	5
NAV TRFC CON B	0	0	0	0	5	15	19	9	9	11	8	11	9	11	9	11	2
TOS MET SAT	0	0	0	8	21	22	27	32	32	26	22	26	31	26	22	22	6
SYNC MET SAT	0	0	0	4	18	25	29	31	31	27	25	28	35	30	27	27	3
POLAR ERS	0	0	0	55	124	79	71	67	67	84	65	71	33	0	41	107	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	0	43	95	39	21	54	23	0
NONNASA TOTAL	0	0	0	96	260	272	286	250	260	260	256	334	280	236	277	294	26
NASA AND NON-NASA TOTAL	0	38	115	620	1453	1931	2338	2623	2528	2409	2373	2174	2205	2253	2275	1635	431

The DoD Programs portion of Table A-11
are contained in Volume VI, Classified
Addendum, pages III- A-130 and III- A-131.

TABLE A-15
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-1 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	11	25	20	24	46	36	23	21	34	28	25	24	12	0
RADIO EXPLORER	0	0	0	0	15	45	50	16	4	26	44	21	3	6	1	7	11
M, SPHERE L-ETR	0	0	0	14	22	10	8	16	22	13	3	4	2	6	3	5	0
M, SPHERE L-MTR	0	0	0	0	12	16	12	8	18	22	15	3	8	2	8	3	7
M, SPHERE M-ETR	0	0	0	14	23	11	8	16	21	13	3	4	2	6	3	4	0
M, SPHERE M-MTR	0	0	0	0	11	16	14	8	19	21	15	3	7	2	9	3	6
M, SPHERE UPPER	0	0	0	0	33	41	30	49	48	33	26	33	33	19	18	12	7
ORB SOLAR OBS	0	0	0	4	14	28	16	0	0	0	0	0	0	0	0	0	0
GEN RELATVITY A	0	0	0	0	0	0	0	0	24	51	24	0	0	0	1	6	8
GEN RELATVITY B	0	0	0	0	0	5	43	34	0	0	0	0	0	0	0	0	0
RADIO INTERFER	0	0	0	0	34	142	156	60	25	56	26	0	0	5	13	12	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	28	61	27	0	0	5	14	12	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPT INTERFER. A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPT INTERFER. B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAD-C	0	26	79	124	127	80	99	146	79	39	75	73	22	26	59	57	5
L S TELESCOPE	0	0	0	20	60	100	114	68	27	30	81	87	28	24	13	8	5
LARGE SOLAR OR	0	0	0	0	0	0	39	180	212	85	17	20	18	98	96	8	5
LARGE RADIO OR	0	0	0	0	0	0	0	0	41	173	189	86	31	35	29	15	7
SUBTOTAL	0	26	79	187	376	514	613	647	604	646	566	371	249	403	351	165	61
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	6	0	23	68	57	54	69	50	35	35	49	30	19	19	20	11
SYNC EARTH OBS	0	0	0	0	13	24	25	31	20	9	22	31	19	9	8	0	4
EARTH PHYSICS	0	0	0	0	18	41	40	40	21	9	6	7	1	6	1	5	0
SYNC MET SAT	0	0	0	0	0	0	23	55	36	8	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	8	20	11	0	0	5	7	0	0	0	5	10
POLAR ERS	0	0	0	0	0	0	0	0	0	0	19	91	144	60	0	0	0
SYNC ERS	0	0	0	0	0	21	54	45	26	9	0	0	4	14	13	0	0
SUBTOTAL	0	0	0	23	96	151	216	251	153	70	87	185	198	108	41	30	25

TABLE A-15
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-1 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	0	6	37	72	88	63	61	78	90	47	25	35	31	49	26
SMALL ATS-A	0	0	0	0	19	39	28	30	39	26	21	28	39	26	20	21	16
SMALL ATS-B	0	0	0	0	18	36	28	29	39	26	22	31	39	28	23	22	16
COOP APPL-A	0	0	0	0	5	13	10	0	0	3	9	6	0	0	0	0	0
COOP APPL-B	0	0	0	0	0	0	0	16	13	8	0	0	0	3	3	9	4
MED NETWORK	0	0	0	0	27	61	27	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	0	28	64	34	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	0	43	100	74	59	51	36	36	35	33	33	20
TRK DATA RELAY	0	0	0	0	8	35	26	16	15	15	19	9	0	6	20	5	0
SUBTOTAL	0	0	6	114	284	314	288	241	241	215	212	157	139	132	130	139	94
PLANETARY																	
MARS VIKING	0	0	0	0	63	154	96	59	23	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	129	184
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	117	176
VENUS EXPL ORB	0	0	0	0	0	21	51	26	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	0	20	78	89	43	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	0	20	78	88	42	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	0	18	72	85	42	0
JUP PIONEER	0	0	0	0	0	0	0	10	76	76	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	0	53	126	53	6	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	43	100	62	62	23	18	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	42	103	63	10	23	25	0
ASTEROID SURV	0	0	0	0	0	0	0	0	0	27	67	35	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	0	43	104	52	13	30	18	0	0	0	0
SUBTOTAL	0	0	0	116	301	220	216	292	292	218	201	295	243	158	162	311	385
OSSA TOTAL	0	26	85	440	1057	1199	1333	1431	1431	1190	1129	1105	938	737	803	842	674

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TABLE A-15
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-1 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	0	0	28	0	0	5	19	14	9	0	0
EXPT SUP CARGO	0	0	0	0	0	10	57	68	141	238	245	267	293	313	327	328	327
PHYSICS LAB	0	0	0	0	0	0	0	16	72	82	34	0	0	0	0	4	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	59	63	25	0
LIFE SCI LAB	0	0	0	0	0	10	45	52	23	0	4	9	13	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	49	43	23	0	0	4	9	13	0	0	0	5
COMM/NAV LAB	0	0	0	0	0	0	0	12	58	68	28	0	4	0	0	0	12
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	82
OMSF TOTAL	0	0	0	11	52	151	191	345	388	315	290	355	383	399	394	421	241
TOTAL NASA	0	26	85	451	1109	1350	1524	1775	1578	1444	1395	1293	1120	1202	1236	1095	573
NON-NASA PROGRAMS																	
COMSAT	0	0	0	8	18	13	9	7	5	15	9	4	3	5	15	4	0
DOMESTIC COMM	0	0	0	11	32	33	29	12	16	39	39	29	25	26	26	29	20
FOREIGN DOMES.	0	0	0	0	7	35	54	45	21	12	3	18	39	34	13	14	9
NAV TRFC CON A	0	0	0	11	24	18	15	9	2	7	2	8	2	7	2	7	0
NAV TRFC CON B	0	0	0	0	5	11	11	8	2	7	2	7	2	8	2	7	0
TOS MET SAT	0	0	0	6	18	17	31	18	19	16	18	19	17	15	15	14	11
SYNC MET SAT	0	0	0	9	25	20	32	22	18	15	18	20	15	14	16	15	7
POLAR ERS	0	0	0	64	142	73	52	49	47	48	33	42	3	1	53	70	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	33	76	43	8	31	31	0	0
NONNASA TOTAL	0	0	0	109	271	220	233	170	130	192	200	190	109	141	173	160	47
NASA AND NON-NASA TOTAL	0	26	85	560	1380	1570	1757	1946	1708	1636	1595	1483	1229	1343	1409	1255	620

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The DoD Programs portion of Table A-15
are contained in Volume VI, Classified
Addendum, pages III-A-135 and III-A-136.

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
RADIO EXPLORER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	16	6	22	3	0.0	0.0	0.0	0.0	16	3	19	0	0	0	0.0	0.0	0.0	0.0	0	15	0	15	0	15	0	15	0	15
1979	0	0.0	54	15	69	0	0.0	0.0	0.0	0.0	54	7	61	0	0	0	0.0	0.0	0.0	0.0	0	45	0	45	0	45	0	45	0	45
1980	2	2.0	55	11	66	2	1.0	0.0	0.0	0.0	55	5	60	2	0	0	0.0	0.0	0.0	0.0	0	44	6	50	0	44	6	50	0	44
1981	1	1.0	15	2	17	1	0.0	0.0	0.0	0.0	15	1	16	0	1	0	0.0	0.0	0.0	0.0	0	13	3	16	0	13	3	16	0	13
1982	0	0.0	7	3	10	0	0.0	0.0	0.0	0.0	7	2	9	0	0	0	0.0	0.0	0.0	0.0	0	4	0	4	0	4	0	4	0	4
1983	0	0.0	38	12	50	0	0.0	0.0	0.0	0.0	38	8	46	0	0	0	0.0	0.0	0.0	0.0	0	26	0	26	0	26	0	26	0	26
1984	1	1.0	55	15	70	1	0.0	0.0	0.0	0.0	55	7	62	0	1	0	0.0	0.0	0.0	0.0	0	41	3	44	0	41	3	44	0	41
1985	2	2.0	23	8	31	2	1.0	0.0	0.0	0.0	23	5	28	0	2	0	0.0	0.0	0.0	0.0	0	15	6	21	0	15	6	21	0	15
1986	0	0.0	8	6	14	0	0.0	0.0	0.0	0.0	8	6	14	0	0	0	0.0	0.0	0.0	0.0	0	3	0	3	0	3	0	3	0	3
1987	1	1.0	3	2	5	1	1.0	0.0	0.0	0.0	3	2	5	0	1	0	0.0	0.0	0.0	0.0	0	3	3	6	0	3	3	6	0	3
1988	0	0.0	6	6	12	0	0.0	0.0	0.0	0.0	6	3	9	0	0	0	0.0	0.0	0.0	0.0	0	1	0	1	0	1	0	1	0	1
1989	0	0.0	17	12	29	0	0.0	0.0	0.0	0.0	17	6	23	0	0	0	0.0	0.0	0.0	0.0	0	7	0	7	0	7	0	7	0	7
1990	2	2.0	8	5	13	2	0.0	0.0	0.0	0.0	8	2	10	0	2	0	0.0	0.0	0.0	0.0	0	5	6	11	0	5	6	11	0	5
TOTAL	9	9.0	365	103	468	9	3.0	.9	.5	.5	305	57	362	2	7	0.0	0.0	0.0	0.0	5.0	0	222	27	249	0	222	27	249	0	222

III-A-138

C3

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MISPHERE L-WTR
LAUNCHED FROM WTR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					CASE C-1					CASE C-1				
	PL	LV	TOT	DIR	DIR	PL	LV	TOT	DIR	DIR	PL	LV	TOT	DIR	DIR	PL	LV	TOT	DIR	DIR	PL	LV	TOT	DIR	DIR	PL	LV	TOT	DIR	DIR
	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1978	0	0.0	13	2	15	0	0.0	0.0	0.0	13	1	0.0	0.0	0.0	14	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1979	0	0.0	22	3	25	0	0.0	0.0	0.0	22	3	0.0	0.0	0.0	25	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1980	1	1.0	13	3	16	1	1.0	0.0	0.0	13	2	1.0	0.0	0.0	15	1	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1981	0	0.0	14	3	17	0	0.0	0.0	0.0	14	3	0.0	0.0	0.0	17	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1982	1	1.0	20	3	23	1	1.0	0.0	0.0	20	2	1.0	0.0	0.0	22	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1983	0	0.0	33	4	37	0	0.0	0.0	0.0	33	3	0.0	0.0	0.0	36	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1984	1	1.0	15	3	18	1	1.0	0.0	0.0	15	2	1.0	0.0	0.0	17	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1985	0	0.0	7	3	10	0	0.0	0.0	0.0	7	3	0.0	0.0	0.0	10	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1986	1	1.0	6	3	9	1	1.0	0.0	0.0	6	2	1.0	0.0	0.0	8	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1987	0	0.0	7	3	10	0	0.0	0.0	0.0	7	3	0.0	0.0	0.0	10	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1988	1	1.0	6	3	9	1	1.0	0.0	0.0	6	2	1.0	0.0	0.0	8	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1989	0	0.0	7	4	11	0	0.0	0.0	0.0	7	2	0.0	0.0	0.0	9	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1990	1	1.0	3	1	4	1	1.0	0.0	0.0	3	1	1.0	0.0	0.0	4	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0

TABLE A-16

III- A- 141

128

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE M-MTR
OSSA
LAUNCHED FROM MTR

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE UPPER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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III-A-145

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GEN RELATIVITY B
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
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	TAT9	PL	TOT	DIR	PROG	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III. A. 146

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
RADIO INTERFER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM					CASE B NEW EXPENDABLE SYSTEM					CASE C-1 SPACE TRANSPORTATION SYSTEM																					
	PL		LV		PROG	DIR	TOT	LV	NO	\$	PL	LV	NO	\$	PL	LV	NO	\$	PL	LV	NO	\$	PL	LV	NO	\$	PL	LV	NO	\$		
	T3F/	C	T3F/	C																											T3F/	C
1974	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	34	0	34	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1979	0	0.0	164	5	169	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1980	0	0.0	203	9	212	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1981	1	1.0	72	4	76	1	1	1.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0

TOTAL 1 1.0 473 18 491 1 1.0 0.0 0.0 0.0 473 17 490 1 0 0.0 0.0 0.0 1.0 1.0 0 387 5 392

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SOLAR ORBIT-A
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-1									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T3C	TOT	DIR	PL	LV	PROG	DIR	\$	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	30	3	33	0	0	0	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	67	8	75	0	0	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	25	3	28	1	1.0	0.0	25	2	27	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	5	3	8	0	0	0	5	3	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	13	8	21	0	0	0	13	6	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	6	2	8	1	1.0	0.0	6	2	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	2.0	146	27	173	2	2.0	0.0	146	22	168	2	0	0.0	0.0	2.0	2.0	2.0	2.0	0	126	11	137						

III. A. 148

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1976 DOLLARS)
SOLAR ORBIT-R
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					CASE C-1					CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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III-A-149

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OPT INTERFER.A
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
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III-A-150

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OPT INTERFER.R
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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	PL	LV	T3C	TOT	DIR	PL	LV	T3D/	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

TOTAL 1 1.0 129 14 123 1 .5 0.0 0.0 109 8 117 1 0 0.6 0.0 .5 .5 0 73 3 76

III-A-151

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
HEAD-C
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										\$																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	PL					LV					T3C/					PL					LV					T3C/						PL					LV					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG					TUG				

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
L S TELESCOPE
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-1									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T3C	TOT	DIR	DIR	PL	LV	PROG		PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	28	0	28	0	28	0	28	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	20	0
1978	0	0.0	82	0	82	0	82	0	82	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	60	0
1979	0	0.0	125	3	128	0	128	0	128	3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	100	0
1980	0	0.0	128	8	136	0	136	0	136	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	114	0
1981	1	1.0	97	6	103	1	103	1	97	5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	0	0.0	0.0	0.0	0.0	0	0	63	5
1982	0	0.0	90	8	98	0	98	0	90	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	23	4
1983	1	1.0	83	6	89	1	89	0	83	6	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	25	5
1984	0	0.0	90	7	97	0	97	0	90	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	76	5
1985	1	1.0	83	7	90	1	90	0	83	5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	78	9
1986	0	0.0	90	7	97	0	97	0	90	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	23	5
1987	1	1.0	76	6	82	1	82	1	76	5	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	20	4
1988	0	0.0	71	8	79	0	79	0	71	6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	8	5
1989	1	1.0	29	3	32	1	32	1	29	3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	3	5
1990	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	5
TOTAL	5	5.0	1072	63	1141	5	5.0	5.0	0.0	1072	57	1129	1	1	5.0	0.0	11.0	0.0	0	613	52	665							

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE RADIO OR
LAUNCHED FROM ETR
OSSA

III-A.155

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	SHL	TUG						
	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	NO	NO						
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0			
1982	0	0.0	41	0	0	0.0	0.0	0.0	41	0	0.0	0.0	0	41	0			
1983	0	0.0	174	3	0	0.0	0.0	0.0	174	3	0.0	0.0	0	173	0			
1984	0	0.0	193	8	0	0.0	0.0	0.0	193	6	0.0	0.0	0	189	0			
1985	1	1.0	110	6	1	1.0	0.0	0.0	110	5	1.0	0.0	0	81	5			
1986	0	0.0	90	8	0	0.0	0.0	0.0	90	6	0.0	0.0	0	27	4			
1987	1	1.0	81	6	1	1.0	0.0	0.0	81	6	0.0	0.0	0	30	5			
1988	0	0.0	85	7	0	0.0	0.0	0.0	85	6	0.0	0.0	0	22	7			
1989	1	1.0	31	3	1	1.0	0.0	0.0	31	2	0.0	0.0	0	11	5			
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	3	4			
TOTAL	3	3.0	805	41	3	3.0	0.0	0.0	805	34	839	1	0	0.0	0.0	577	30	607

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1976 DOLLARS)
POLAR EARTH OB
OSSA
LAUNCHED FROM WTR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	PL	LV	TAT9	TOT	DIR	PL	LV	5/2/	PL	TOT	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1978	0	0.0	12	3	15	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1979	0	0.0	26	6	32	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1980	1	1.0	29	5	34	1	.4	0.0	0.0	0.0	24	2	26	1	0	0.0	0.0	0.0	0.0	0.0	.6	22	3	25	0	24	0	0	0	0
1981	0	0.0	43	7	50	0	0.0	0.0	0.0	0.0	34	3	37	0	0	0.0	0.0	0.0	0.0	0.0	.6	31	0	31	0	31	0	0	0	0
1982	1	1.0	23	5	28	1	.3	0.0	0.0	0.0	19	3	22	0	0	0.0	0.0	0.0	0.0	0.0	.7	16	4	20	0	16	0	0	0	0
1983	0	0.0	17	6	23	0	0.0	0.0	0.0	0.0	14	4	18	0	0	0.0	0.0	0.0	0.0	0.0	0.0	9	0	9	0	9	0	0	0	0
1984	1	1.0	26	5	31	1	0.0	.4	0.0	0.0	21	3	24	0	0	0.0	0.0	0.0	0.0	0.0	.7	18	4	22	0	18	0	0	0	0
1985	0	0.0	43	6	49	0	0.0	0.0	0.0	0.0	33	3	36	0	0	0.0	0.0	0.0	0.0	0.0	.7	31	0	31	0	31	0	0	0	0
1986	1	1.0	22	6	28	1	0.0	.4	0.0	0.0	18	3	21	0	0	0.0	0.0	0.0	0.0	0.0	.7	16	3	19	0	16	0	0	0	0
1987	0	0.0	16	6	22	0	0.0	0.0	0.0	0.0	13	4	17	0	0	0.0	0.0	0.0	0.0	0.0	0.0	9	0	9	0	9	0	0	0	0
1988	1	1.0	9	5	14	1	0.0	.4	0.0	0.0	7	3	10	0	0	0.0	0.0	0.0	0.0	0.0	.7	4	4	8	0	4	0	0	0	0
1989	0	0.0	9	6	15	0	0.0	0.0	0.0	0.0	6	4	10	0	0	0.0	0.0	0.0	0.0	0.0	.7	0	0	0	0	0	0	0	0	0
1990	1	1.0	1	3	4	1	0.0	.4	0.0	0.0	0	1	1	0	0	0.0	0.0	0.0	0.0	0.0	.7	0	4	4	0	0	0	0	0	0
TOTAL	6	6.0	276	69	345	6	.7	1.6	0.0	220	39	259	1	5	0.0	0.0	4.1	4.1	0	190	22	212								

III-A-157

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1979 DOLLARS)
EARTH PHYSICS OSSA
LAUNCHED FROM WTR

III-A-158

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM															
	PL		LV		PL		LV		PL		LV		PL		LV		LV		LV		LV		LV	
	TAT3 /D	TOT DIR	LV	PROG DIR	PL	LV	LV	PROG DIR	PL	LV	LV	PROG DIR	PL	LV	LV	PROG DIR	PL	LV	LV	PROG DIR	PL	LV	LV	PROG DIR
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1978	0	0.0	19	21	0	0.0	0.0	0.0	15	1	16	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	18
1979	0	0.0	45	50	0	0.0	0.0	0.0	38	4	42	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	41
1980	1	1.0	44	50	1	1.0	0.0	0.0	37	5	42	1	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	38
1981	1	1.0	42	48	1	1.0	0.0	0.0	35	5	40	1	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	35
1982	1	1.0	24	29	1	1.0	0.0	0.0	21	4	25	1	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	16
1983	1	1.0	9	12	1	1.0	0.0	0.0	8	2	10	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	5
1984	0	0.0	11	14	0	0.0	0.0	0.0	10	3	13	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	6
1985	1	1.0	6	9	1	1.0	0.0	0.0	6	2	8	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	2
1986	0	0.0	6	10	0	0.0	0.0	0.0	5	2	7	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	1
1987	1	1.0	5	8	1	1.0	0.0	0.0	4	3	7	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	1
1988	0	0.0	6	9	0	0.0	0.0	0.0	5	2	7	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	1
1989	1	1.0	0	1	1	1.0	0.0	0.0	2	1	3	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	1
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
TOTAL	7	7.0	217	44	261	7	7.0	0.0	186	34	220	3	4	0.0	0.0	6.5	0.0	0	165	30	195			

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					TUG					LV					PL					LV					PROG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	PL	LV	TOT	DIR	PROG	PL	LV	LV	LV	LV	PL	TOT	DIR	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-159

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TIROS
LAUNCHED FROM WTR
OSSA

III

160

CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
PL	LV	TAT3	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	SHL	TUG	TUG	PL	LV	PROG			
/0																													
1974	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1975	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1976	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1977	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1978	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1979	0	0.0	4	2	6	0	0	0	0	0.0	0.0	4	1	5	0	0	0	0	0	0	0.0	0.0	0.0	8	0	8			
1980	0	0.0	11	3	14	0	0	0	0	0.0	0.0	11	3	14	0	0	0	0	0	0	0.0	0.0	0.0	20	0	20			
1981	1	1.0	5	1	6	0	1	1	0	1.0	0.0	5	1	6	1	0	0	0	0	0	0.0	0.0	0.0	8	3	11			
1982	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1983	0	0.0	4	2	6	0	0	0	0	0.0	0.0	4	1	5	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1984	0	0.0	11	3	14	0	0	0	0	0.0	0.0	11	3	14	0	0	0	0	0	0	0.0	0.0	0.0	5	0	5			
1985	1	1.0	5	2	7	0	1	1	0	1.0	0.0	5	1	6	0	0	0	0	0	0	0.0	0.0	0.0	5	2	7			
1986	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1987	0	0.0	0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1988	0	0.0	4	1	5	0	0	0	0	0.0	0.0	4	1	5	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0			
1989	0	0.0	11	4	15	0	0	0	0	0.0	0.0	11	3	14	0	0	0	0	0	0	0.0	0.0	0.0	5	0	5			
1990	1	1.0	2	1	3	1	1	1	0	1.0	0.0	2	1	3	0	1	0	0	0	0	0.0	0.0	0.0	4	6	10			
TOTAL	3	3.0	57	19	76	3	3	3.0	0.0	0.0	57	15	72	1	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55	11	66			

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
POLAR ERS
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	TAT9	TOT	DIR	PROG	DIR	TAT9	TOT	DIR	PROG	DIR	TAT9	TOT	DIR	PROG	DIR	TAT9	TOT	DIR	PROG	DIR	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-161

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1				CASE C-2				CASE C-3			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1979	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1980	0	0.0	25	3	28	0.0	0.0	0.0	20	2	22	0	0	0.0	0.0	0.0	21	0	21	0
1981	1	1.0	59	12	71	0.0	0.0	0.0	47	6	53	0	0	0.0	0.0	0.0	54	0	54	0
1982	2	2.0	45	18	63	1	.4	0.0	36	10	46	1	0	0.0	0.0	.5	42	3	45	0
1983	1	1.0	21	10	31	2	0.0	.7	17	7	24	2	0	0.0	0.0	1.0	21	5	26	0
1984	0	0.0	5	3	8	1	0.0	.4	4	1	5	1	0	0.0	0.0	.7	5	4	9	0
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1986	0	0.0	18	12	30	0	0.0	0.0	15	7	22	0	0	0.0	0.0	0.0	0	0	0	0
1987	1	1.0	26	15	41	1	0.0	.4	21	8	29	0	1	0.0	0.0	.7	11	3	14	0
1988	2	2.0	9	4	13	2	0.0	.7	7	2	9	0	2	0.0	0.0	1.3	6	7	13	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
TOTAL	7	7.0	212	80	292	7	.4	2.2	170	45	215	4	3	0.0	0.0	4.2	164	22	186	0

III-A-162

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
APPL TECH SAT
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										CASE C-2 EXP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III-A-163

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-A
LAUNCHED FROM ETR

FY	CASE A										CASE P										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					CASE C-1					CASE C-1				
	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	12	2	14	0	0	0	0	0	16	2	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	37	8	45	0	0	0	0	0	32	6	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	31	10	41	1	1	1	1	1	30	6	36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1980	1	1.0	36	10	46	1	1	1	1	1	32	5	37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1981	1	1.0	46	9	55	1	1	1	1	1	40	6	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	34	10	44	1	1	1	1	1	31	7	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	27	10	37	1	1	1	1	1	26	6	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	36	9	45	1	1	1	1	1	32	6	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	46	10	56	1	1	1	1	1	42	7	47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	34	10	44	1	1	1	1	1	31	7	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	27	9	36	1	1	1	1	1	26	9	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	27	10	37	1	1	1	1	1	26	6	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	21	7	28	1	1	1	1	1	20	5	25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	4	2	6	1	1	1	1	1	4	1	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	12	12.0	418	116	534	12	1.8	2.2	1.0	386	79	465	2	10	1.0	0.0	7.2	7.2	0	309	50	359								

III-A. 164

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-R
LAUNCHED FROM WTR

FY	CASE A				CASE B										CASE C-1														
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1														
	PL	LV	TAT3 /D	NO	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	TAT3 /D	NO	LV	SHTL	TUG	NO	LV	TUG	NO	LV	PL	LV	PROG	DIR	
1974	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	0	0	0	0	0
1977	0	0.0	12	2	14	0.0	0.0	0.0	16	1	17	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	16	2	18	36	0
1978	0	0.0	37	5	42	0.0	0.0	0.0	32	4	36	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	32	4	36	28	0
1979	1	1.0	31	6	37	1	0.0	0.0	30	5	35	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	26	2	28	2	0
1980	1	1.0	36	6	42	1	1.0	0.0	32	5	37	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	27	2	29	39	0
1981	1	1.0	46	7	53	1	1.0	0.0	40	5	45	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	34	5	39	26	0
1982	1	1.0	34	6	40	1	0.0	0.0	31	6	37	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	23	3	26	31	0
1983	1	1.0	27	6	33	1	1.0	0.0	26	4	30	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	17	5	22	28	0
1984	1	1.0	36	7	43	1	1.0	0.0	32	5	37	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	25	6	31	39	0
1985	1	1.0	46	6	52	1	1.0	0.0	40	5	45	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	34	5	39	23	0
1986	1	1.0	34	6	40	1	1.0	0.0	31	5	36	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	23	5	28	16	0
1987	1	1.0	27	7	34	1	1.0	0.0	26	5	31	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	17	6	23	22	0
1988	1	1.0	27	6	33	1	1.0	0.0	26	6	32	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	17	5	22	13	0
1989	1	1.0	21	5	26	1	0.0	0.0	20	3	23	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	13	3	16	10	0
1990	1	1.0	4	1	5	1	1.0	0.0	4	1	5	0	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0	5	5	10	5	0

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-A
LAUNCHED FROM ETR

CASE A				CASE B				CASE C-1			
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
PL	LV	TOT	DIR	PL	LV	LV	LV	PL	LV	LV	LV
T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/	T38/
C	C	C	C	C	C	C	C	C	C	C	C
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0	0	0	0	0	0	0	0	0	0
1975	0	0	0	0	0	0	0	0	0	0	0
1976	0	0	0	0	0	0	0	0	0	0	0
1977	0	0	0	0	0	0	0	0	0	0	0
1978	0	0	0	0	0	0	0	0	0	0	0
1979	1	1	1	1	1	1	1	1	1	1	1
1980	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0
1984	1	1	1	1	1	1	1	1	1	1	1
1985	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	2	2	2	2	2	2	2	2	2	2
	57	23	80	54	16	70	1	1	0	0	0
	37	9	46								

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-B
LAUNCHED FROM WTR

CASE A										CASE B										CASE C-1									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	TAT3	TOT	DIR	PL	LV	PROG	DIR	\$	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	9	2	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	19	3	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	7	1	8	1	.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	6	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	12	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	4	2	6	1	.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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TOTAL 2 2.0 57 13 70 2 1.0 0.0 0.0 57 11 68 1 1 0.0 0.0 1.0 1.0 0 48 5 53

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MED NETWORK
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV				
	PL	LV	T3C	TOT	DIR	PL	LV	T3C/	TOT	DIR	PL	LV	T3C	REF	NO	PL	LV	TUG	TOT	DIR	PL	LV	TUG	TOT	DIR	PL	LV	TUG	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1977	0	0.0	26	7	33	0	0.0	0.0	26	3	29	0.0	0.0	0	0	0	0.0	0.0	0	0	22	5	0	0	27	0	0.0	0.0	0	0
1978	0	0.0	58	15	73	0	0.0	0.0	58	5	63	0.0	0.0	0	0	0	0.0	0.0	0	0	51	10	0	0	61	0	0.0	0.0	0	0
1979	2	2.0	21	5	26	2	0.0	0.0	21	2	23	0	0.0	0	0	0	0.0	0.0	0	0	18	9	0	0	27	0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
TOTAL	2	2.0	105	27	132	2	0.0	0.0	105	10	115	2	0	0	0	0	0.0	0.0	0	0	91	24	0	0	115	0	0.0	0.0	0	0

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EDUC BROADCAST
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM					CASE B NEW EXPENDABLE SYSTEM					CASE C-1 SPACE TRANSPORTATION SYSTEM																				
	PL		LV		\$	PL		LV		\$	PL		LV		\$	PL		LV		\$	PL		LV		\$	PL		LV		\$	
	NO	NO	NO	NO		NO	NO	NO	NO		NO	NO	NO	NO		NO	NO	NO	NO		NO	NO	NO	NO		NO	NO	NO	NO		NO
1974	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1978	0	0	33	9	42	0	0	0	0	0	33	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0	74	19	93	0	0	0	0	0	74	7	81	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	2	2	27	7	34	2	7	0	0	0	27	2	29	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1979 DOLLARS)
SYSTEM DEMO
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					TUG					TUG				
	PL	LV	T3C	TOT	DIR	PL	LV	T3D/	LV	LV	PL	LV	T3C	REF	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	42	7	49	0	0	0	0	0	42	3	45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	95	22	117	0	0	0	0	0	95	9	104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	2	2.0	73	27	100	2	0	0	0	0	73	12	85	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	2	2.0	52	28	80	2	0	0	0	0	52	10	62	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	2	2.0	54	27	81	2	0	0	0	0	54	11	65	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	2	2.0	52	28	80	2	0	0	0	0	52	11	63	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	2	2.0	54	27	81	2	0	0	0	0	54	11	65	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	2	2.0	52	28	80	2	0	0	0	0	52	11	63	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	2	2.0	54	27	81	2	0	0	0	0	54	11	65	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	2	2.0	49	28	77	2	0	0	0	0	49	11	60	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	2	2.0	36	20	56	2	0	0	0	0	36	8	44	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	2	2.0	11	6	17	2	0	0	0	0	11	2	13	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	20	20.0	624	275	899	20	6.5	0.0	0.0	0.0	624	110	734	8	12	2.0	0.9	17.4	17.4	0	423	130	553							

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TRK DATA RELAY
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM											
	PL	LV	T3C	TOT	DIR	PL	LV	LV	T3F/	LV	LV	TOT	DIR	PL	LV	LV	T3C	PL	LV	LV	TOT	DIR	PL	LV	LV	TUG	TUG	TUG	TOT	DIR	LV	PROG
1974	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	3	3	6	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	18	15	33	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1979	1	1.0	29	21	50	1	.4	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1980	2	2.0	15	13	28	2	0.0	0.0	.6	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1981	1	1.0	12	10	22	1	.3	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	24	18	42	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1983	2	2.0	15	13	28	2	0.0	0.0	.6	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1984	1	1.0	2	3	5	1	.4	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1985	0	0.0	5	7	12	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	16	19	35	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1987	2	2.0	12	13	25	2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1988	1	1.0	2	2	4	1	0.0	0.0	.3	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0

TOTAL 10 10.0 153 137 137 290 15 1.1 2.1 0.0 153 55 208 4 6 1.0 0.0 8.1 8.1 0 112 62 174

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS VIKING
LAUNCHED FROM ETR

A-FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV					PL LV				

III. A-172

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1979 DOLLARS)
MARS SAMPL LOR
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					SPACE TRANSPORTATION SYSTEM					CASE C-1				
	PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG	PL	LV	PL	LV	PROG
	TOT	DIR	TOT	DIR	DIR	TOT	DIR	TOT	DIR	DIR	TOT	DIR	TOT	DIR	DIR	TOT	DIR	TOT	DIR	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1987	0	0.0	26	0	26	0	0.0	0.0	0.0	0.0	26	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1988	0	0.0	138	9	147	0	0.0	0.0	0.0	0.0	138	9	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1989	0	0.0	181	20	201	0	0.0	0.0	0.0	0.0	181	19	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0
1990	2	2.0	65	7	72	2	2.0	0.0	0.0	0.0	65	7	2	2.0	0.0	2	2.0	0.0	0.0	0.0	2	2.0	0.0	0.0	2.0	0	0.0	0.0	0.0	0
TOTAL	2	2.0	410	36	446	2	2.0	0.0	0.0	0.0	410	35	445	2	0	2.0	0.0	4.0	2.0	0	410	34	444							

III-A-173

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS SAMPL ORB
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					CASE C-1					CASE C-1				
	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	2	2.0	64	7	71	2	2.0	64	7	71	2	2.0	64	7	71	2	2.0	64	7	71	2	2.0	64	7	71	2	2.0	64	7	71
TOTAL	2	2.0	386	36	422	2	2.0	386	35	421	2	2.0	386	35	421	2	2.0	386	35	421	2	2.0	386	35	421	2	2.0	386	34	420

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS EXPL ORR
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	24	2	26	0	0.0	0.0	0.0	0.0	20	3	23	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	52	6	58	0	0.0	0.0	0.0	0.0	44	6	50	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	19	2	21	1	1.0	0.9	0.0	0.0	16	2	18	1	0	0	0.0	0.0	0.0	0.0	1	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	1	1.0	95	10	105	1	1.0	0.0	0.0	0.0	80	11	91	1	0	0	0.0	0.0	0.0	0.0	1.0	1.0	0	0	0	0	0	0	0	0

III-A-175

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS MAPPING
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM										CASE C-2 EXP									
	PL					LV					PL					LV					PL					LV					LV					LV				
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO		
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1979	0	0.0	20	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1980	0	0.0	84	4	88	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1981	0	0.0	90	10	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1982	1	1.0	31	4	35	1	1.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
TOTAL	1	1.0	225	18	243	1	1.0	0.0	0.0	0.0	197	44	241	1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		

III-A-176

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 1
OSSA
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM																
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		
	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	20	0	20	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	84	4	88	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	90	15	105	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1985	1	1.0	30	4	34	1	1.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	1.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0

III-A-177

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 2
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM																			
	PL					LV					PL					LV					PL					LV					PL					LV				
	T30/	TOT	DIR	PROG	DIR	T3F/	LV	LV	NO	\$	TOT	DIR	DIR	PROG	NO	NO	NO	NO	\$	NEW	REF	LV	LV	SHIL	TUG	LV	TUG	LV	TUG	LV	PROG	DIR								
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1985	0	0.0	18	0	18	0	0.0	0.0	0.0	16	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0								
1986	0	0.0	79	4	83	0	0.0	0.0	0.0	69	4	73	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	18								
1987	0	0.0	86	10	96	0	0.0	0.0	0.0	75	10	85	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	72								
1988	1	1.0	29	4	33	1	1.0	0.0	0.0	25	3	28	1	0	0	0	0.0	0.0	0.0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	85								
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	5									
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	42								
TOTAL	1	1.0	212	18	230	1	1.0	0.0	0.0	185	17	202	1	0	0	0	0.0	0.0	0.0	1	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	217							

III-A-178

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP PIONEER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL LV					PL LV					PL LV					PL LV					PL LV					PL LV				
	TOT	LV	PROG	DIR	\$	TOT	LV	PROG	DIR	\$	TOT	LV	PROG	DIR	\$	TOT	LV	PROG	DIR	\$	TOT	LV	PROG	DIR	\$	TOT	LV	PROG	DIR	\$
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	0	0.0	8	17	9	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	2	2.0	70	19	89	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	0	0.0	59	7	66	2	2.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
TOTAL	2	2.0	137	35	172	2	2.0	0.0	0.0	111	34	145	2	0	2.0	0.0	2.0	0.0	2.0	0	137	25	162							

III-A-179

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1973 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1										
	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	
	NO	NO	\$	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1977	0	0.0	45	10	55	0	0.0	0.0	45	9	0	0.0	0.0	45	9	0	0.0	0.0	45	9	0	0.0	0.0	45	9	0	0.0	0.0	42	11	
1978	0	0.0	103	21	124	0	0.0	0.0	103	20	0	0.0	0.0	103	20	0	0.0	0.0	103	20	0	0.0	0.0	103	20	0	0.0	0.0	102	24	
1979	2	2.0	40	7	47	2	2.0	0.0	40	0	0	0.0	0.0	40	0	0	0.0	0.0	40	0	0	0.0	0.0	40	0	0	0.0	0.0	45	8	
1980	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1983	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1984	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	
TOTAL	2	2.0	188	38	226	2	2.0	0.0	188	37	225	2	2.0	0.0	188	37	225	2	2.0	0.0	189	43	232	2	2.0	0.0	189	43	232	2	2.0

III-A-180

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP OR3 PRORE
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																
	PL					LV					PL					LV					PL					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV									

TOTAL 2 2.0 213 39 251 2 2.0 0.0 0.0 0.0 213 37 250 2 0 2.0 0.0 4.0 2.0 0 212 34 246

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTEROID SURV
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1				SPACE TRANSPORTATION SYSTEM											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				CASE C-1				SPACE TRANSPORTATION SYSTEM											
	PL	LV	T3C	TOT	PL	LV	5/2/	TOT	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO	PL	LV	NO	NO
	PROG	DIR	DIR	DIR	PROG	DIR	DIR	DIR	PROG	DIR	DIR	DIR	PROG	DIR	DIR	DIR	PROG	DIR	DIR	DIR	PROG	DIR	DIR	DIR
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1982	0	0.0	30	30	33	3	0.0	0.0	0.0	39	3	33	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1983	0	0.0	67	67	75	8	0.0	0.0	0.0	67	6	73	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1984	1	1.0	25	25	28	3	1.0	0.0	0.0	25	2	27	1	0	0.0	0.0	1.0	1.0	0	0	30	5	35	35
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
TOTAL	1	1.0	122	14	136	1	1.0	0.0	0.0	122	11	133	1	0	0.0	0.0	1.0	1.0	0	0	124	5	129	129

III-A-183

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMET RENDEZ
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1				CASE C-2				CASE C-3			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	DIR	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0
1980	0	0.0	48	3	51	0	0.0	0.0	48	3	51	0	0	0.0	0.0	0.0	43	0	0	0
1981	0	0.0	106	8	114	0	0.0	0.0	106	6	112	0	0	0.0	0.0	0.0	104	0	104	43
1982	1	1.0	40	3	43	1	1.0	0.0	43	2	42	1	0	0.0	0.0	1.0	47	5	52	104
1983	0	0.0	13	3	16	0	0.0	0.0	13	3	16	0	0	0.0	0.0	0.0	13	0	13	47
1984	0	0.0	30	8	38	0	0.0	0.0	30	6	36	0	0	0.0	0.0	0.0	30	0	30	13
1985	1	1.0	12	2	14	1	1.0	0.0	12	2	14	1	0	0.0	0.0	1.0	12	6	18	30
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	12
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
TOTAL	2	2.0	249	27	276	2	2.0	0.0	249	22	271	2	0	0.0	0.0	2.0	249	11	260	0

II-A-184

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE STATION
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM							
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	SHL	TUG	LV	TUG	LV	PL
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1979	0	0.0	0	65	0	0.0	0	10	0	0.0	0	10	0	0.0	0	0	0	0	0	0
1980	0	0.0	0	144	0	0.0	0	21	0	0.0	0	21	0	0.0	0	0	0	0	0	0
1981	0	1.0	0	53	0	0.0	0	8	0	0.0	0	8	0	0.0	0	0	0	0	0	28
1982	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	5
1986	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	19
1987	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	14
1988	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	9
1989	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0
TOTAL	0	1.0	0	262	0	2.0	0.0	0	78	0	0.0	0	78	0	0.0	0	0	0	0	75

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EXPT SUP CARGO OMSF
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV				
	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	14	0	0	0.0	0	14	0	0	0.0	0	14	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	92	11	103	0	0	92	11	103	0	0	92	11	103	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	119	93	212	0	0	119	93	212	0	0	119	93	212	0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	1	1.0	209	225	434	1	1.0	0	209	225	434	1	1.0	209	225	434	1	1.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	6	6.0	241	271	512	6	6.0	0	241	270	511	1	5.0	241	270	511	1	5.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	6	6.0	241	270	511	6	6.0	0	241	270	511	0	6.0	241	270	511	0	6.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	6	6.0	260	294	554	6	6.0	0	260	292	552	0	6.0	260	292	552	0	6.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	6	6.0	304	342	646	6	6.0	0	304	342	646	0	6.0	304	342	646	0	6.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	8	8.0	322	361	683	8	8.0	0	322	360	682	2	8.0	322	360	682	2	8.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	8	8.0	322	361	683	8	8.0	0	322	360	682	0	8.0	322	360	682	0	8.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	8	8.0	322	361	683	8	8.0	0	322	360	682	0	8.0	322	360	682	0	8.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	8	8.0	247	270	517	8	8.0	0	247	270	517	0	8.0	247	270	517	0	8.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	8	8.0	71	72	143	8	8.0	0	71	72	143	0	8.0	71	72	143	0	8.0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
TOTAL	65	65.0	2764	2931	5595	65	65.0	0.0	2764	2925	5689	4	61	0.0	0.0	65.0	0.0	0	2504	286	2790									

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
PHYSICS LAR
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM											
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	REF	PL	LV	SHL	TUG	LV	LV	TUG	LV	LV
	NO	NO	\$	\$	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$
1974	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1980	0	0.0	16	0	0	0.0	0.0	16	0	0	0	0	0.0	0.0	0.0	0	0	0	0	16
1981	0	0.0	84	3	0	0.0	0.0	84	3	0	0	0	0.0	0.0	0.0	0	0	0	0	72
1982	0	0.0	107	8	0	0.0	0.0	107	6	113	0	0	0.0	0.0	0.0	0	0	0	0	82
1983	1	1.0	38	3	1	1.0	0.0	38	2	40	1	0	0.0	0.0	1.0	0.0	0	0	0	29
1984	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	1.0	0.0	0	0	0	4
1989	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
TOTAL	1	1.0	245	14	259	1	1.0	0.0	245	11	256	1	0	0.0	0.0	2.0	0.0	0	199	9 208

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LIFE SCI LAB
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-1									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T3F/	TOT	DIR	PL	LV	PROG	DIR		PL	LV	T3F/	TOT	DIR	PL	LV	PROG	DIR		PL	LV	REF	NO	NO	NO	NO	NO	NO	NO
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	13	0	13	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	65	5	70	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	81	9	90	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	26	4	30	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	10	5	15	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	23	10	33	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	9	3	12	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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TOTAL 2 2.0 227 36 263 2 2.0 0.0 0.0 227 35 262 1 1 0.0 0.0 4.0 0.0 0 142 19 161

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EARTH OBS LAB
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	PL	LV	T3C	TOT	DIR	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMM/NAV LAB
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM											
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	REF	PL	LV	LV	LV	LV	TUG	TUG	LV
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0
1980	0	0.0	18	0	0	0.0	0.0	0	18	0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0
1981	0	0.0	87	3	90	0.0	0.0	0.0	87	3	90	0	0	0.0	0.0	0.0	0	0	58	0
1982	0	0.0	109	8	117	0	0.0	0.0	109	6	115	0	0	0.0	0.0	0.0	0	0	68	0
1983	1	1.0	37	3	40	1	1.0	0.0	37	2	39	1	0	0.0	0.0	1.0	0.0	0	23	5
1984	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	1.0	0.0	0	0	4
1986	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1988	0	0.0	13	3	16	0	0.0	0.0	13	3	16	0	0	0.0	0.0	0.0	0.0	0	0	0
1989	0	0.0	31	8	39	3	0.0	0.0	31	6	37	0	0	0.0	0.0	0.0	0.0	0	12	0
1990	1	1.0	11	2	13	1	1.0	0.0	11	3	14	0	1	0.0	0.0	1.0	0.0	0	12	5
TOTAL	2	2.0	306	27	333	2	2.0	0.0	306	23	329	1	1	0.0	0.0	3.0	0.0	0	185	14
																				199

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMSAT
LAUNCHED FROM ETR
NON NASA

FY	CASE A										CASE B										CASE C-1									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					TUG				
	PL	LV	TOT	LV	DIR	PL	LV	LV	LV	LV	PL	TOT	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	3	7	15	0	0.0	0.0	0.0	0.0	8	4	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	15	18	33	3	0.0	0.0	0.0	0.0	15	10	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1979	2	2.0	13	17	30	2	.3	1.0	0.0	0.0	13	8	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1980	1	1.0	8	16	24	1	.3	0.0	0.0	0.0	8	4	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1981	1	1.0	7	10	17	1	.3	0.0	0.0	0.0	7	3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1982	0	0.0	14	18	32	0	0.0	0.0	0.0	0.0	14	7	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1983	2	2.0	13	17	30	2	0.0	0.0	0.0	0.0	13	6	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1984	1	1.0	8	10	18	1	.3	0.0	0.0	0.0	8	4	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1985	1	1.0	2	3	5	1	.3	0.0	0.0	0.0	2	1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	5	7	12	0	0.0	0.0	0.0	0.0	5	3	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	14	18	32	0	0.0	0.0	0.0	0.0	14	8	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1988	2	2.0	10	13	23	2	0.0	0.0	0.0	0.0	10	5	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1989	1	1.0	2	3	5	1	.3	0.0	0.0	0.0	2	1	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
TOTAL	11	11.0	119	151	270	11	1.8	1.0	1.3	1.3	119	64	183	2	9	0.0	0.0	7.4	7.4	0	73	39	112							

III. A. 193

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
DOMESTIC COMM
NON NASA
LAUNCHED FROM ETR

A FY	CASE A CURRENT EXPEND. SYSTEM				CASE B NEW EXPENDABLE SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM				CASE C-1 SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/	30/
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0
1977	0	0.0	4	4	0	0.0	0.0	0.0	4	2	6	6	0	0	0.0	0.0	0	0	6	11
1978	0	0.0	19	19	38	0	0.0	0.0	19	7	26	26	0	0	0.0	0.0	0	0	20	32
1979	1	1.0	28	27	55	1	.4	0.0	28	9	37	37	1	0	1.0	0.0	0	0	28	33
1980	2	2.0	22	21	43	2	.7	0.0	22	9	31	31	2	0	0.0	0.0	0	0	18	29
1981	1	1.0	22	22	44	1	.4	0.0	22	10	32	32	1	0	0.0	0.0	0	0	7	12
1982	1	1.0	32	32	64	1	0.0	.5	32	14	46	46	0	1	0.0	0.0	0	0	11	16
1983	2	2.0	42	35	77	2	0.0	1.0	42	13	55	55	0	2	0.0	0.0	0	0	28	39
1984	2	2.0	47	35	82	2	.7	0.0	47	14	61	61	0	2	0.0	0.0	0	0	23	39
1985	2	2.0	41	35	76	2	.7	0.0	41	16	57	57	0	2	0.0	0.0	0	0	18	29
1986	2	2.0	37	35	72	2	0.0	1.0	37	17	54	54	0	2	0.0	0.0	0	0	15	25
1987	2	2.0	37	35	72	2	0.0	1.0	37	15	52	52	0	2	0.0	0.0	0	0	15	26
1988	2	2.0	37	35	72	2	0.0	1.0	37	15	52	52	0	2	0.0	0.0	0	0	16	26
1989	2	2.0	26	27	53	2	.7	0.0	26	11	37	37	0	2	0.0	0.0	0	0	18	29
1990	2	2.0	7	7	14	2	0.0	1.0	7	4	11	11	0	2	0.0	0.0	0	0	9	20
TOTAL	21	21.0	401	369	770	21	3.6	5.5	401	156	557	557	4	17	1.0	0.0	0	0	231	366

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
FOREIGN COMES.
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-1											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-1					SPACE TRANSPORTATION SYSTEM					CASE C-1						
	PL	LV	TOT	PL	LV	PROG	DIR	PL	LV	PROG	DIR	TOT	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	7	6	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	32	29	61	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	2	2.0	53	49	102	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	6	6.0	42	32	74	6	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	2	2.0	26	17	43	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	2	2.0	7	4	11	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0	0.0	13	12	25	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0	0.0	45	39	84	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	4	4.0	53	47	100	4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	5	5.0	28	27	55	5	1.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	2	2.0	15	16	31	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	1	1.0	14	15	29	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	2	2.0	4	5	9	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	26	26.0	339	298	637	26	12.0	1.0	0.0	0.0	0.0	339	148	487	10	16	0.0	0.0	13.0	13.0	0	235	69	304								

III. A-195

TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON R
NON NASA
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-1											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
	138/	TOT	DIR	DIR	5/2/	5/2/	TOT	DIR	NEW	REF	LV	LV	SHTL	TUG	TUG	LV	TUG	TUG	DIR	DIR
	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$
1974	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1978	0	0.0	2	2	4	0.0	0.0	2	3	5	0.0	0.0	0.0	0.0	0.0	0.0	0	5	0	5
1979	0	0.0	7	8	15	0.0	0.0	7	8	15	0.0	0.0	0.0	0.0	0.0	0.0	0	11	0	11
1980	1	1.0	10	7	17	1	1.0	0.0	10	9	19	1	0	0.0	1.0	1.0	0	6	5	11
1981	1	1.0	4	5	9	1	1.0	0.0	4	5	9	0	1	0.0	1.0	1.0	0	2	6	8
1982	0	0.0	5	5	10	0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0	2	0	2
1983	1	1.0	4	5	9	1	1.0	0.0	4	4	8	0	1	0.0	1.0	1.0	0	2	5	7
1984	0	0.0	5	5	10	0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0	2	0	2
1985	1	1.0	4	4	8	1	1.0	0.0	4	5	9	0	1	0.0	1.0	1.0	0	2	5	7
1986	0	0.0	5	6	11	0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0	2	0	2
1987	1	1.0	4	4	8	1	1.0	0.0	4	5	9	0	1	0.0	1.0	1.0	0	2	6	8
1988	0	0.0	5	5	10	0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0	2	0	2
1989	1	1.0	0	2	2	1	1.0	0.0	0	2	2	0	1	0.0	1.0	1.0	0	2	5	7
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
TOTAL	6	6.0	55	58	113	6	6.0	0.0	55	65	120	1	5	0.0	0.0	6.0	0	40	32	72

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYNC NET SAT
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-1 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1977	0	0.0	4	3	7	0	0.0	0.0	0.0	0.0	3	1	4	0	0	0	0.0	0.0	0.0	0.0	0.0	4	5	9	10	15	10	4	5	9
1978	0	0.0	15	9	24	0	0.0	0.0	0.0	0.0	12	6	18	0	0	0	0.0	0.0	0.0	0.0	0.0	15	10	25	16	4	4	20	32	22
1979	1	1.0	20	11	31	1	0.0	0.0	0.0	0.0	16	9	25	1	0	0	0.0	0.0	0.0	0.0	0.0	16	4	20	16	4	4	20	32	22
1980	1	1.0	25	12	37	1	0.0	0.0	0.0	0.0	22	7	29	1	0	0	0.0	0.0	0.0	0.0	0.0	28	4	32	17	5	5	22	18	15
1981	1	1.0	30	11	41	1	0.0	0.0	0.0	0.0	24	7	31	0	1	0	0.0	0.0	0.0	0.0	1.0	17	5	22	14	4	4	18	15	15
1982	1	1.0	24	12	36	1	0.0	0.0	0.0	0.0	19	8	27	0	1	0	0.0	0.0	0.0	0.0	0.7	12	3	15	12	3	3	15	18	15
1983	1	1.0	20	11	31	1	0.0	0.0	0.0	0.0	16	10	26	0	1	0	0.0	0.0	0.0	0.0	0.7	12	3	15	12	3	3	15	18	15
1984	1	1.0	24	12	36	1	0.0	0.0	0.0	0.0	20	8	28	0	1	0	0.0	0.0	0.0	0.0	0.7	12	3	15	12	3	3	15	18	15
1985	1	1.0	30	11	41	1	0.0	0.0	0.0	0.0	24	11	35	0	1	0	0.0	0.0	0.0	0.0	0.5	17	3	20	13	3	3	16	14	14
1986	1	1.0	24	12	36	1	0.0	0.0	0.0	0.0	19	11	30	0	1	0	0.0	0.0	0.0	0.0	0.7	13	3	16	10	4	4	14	14	14
1987	1	1.0	20	11	31	1	0.0	0.0	0.0	0.0	16	11	27	0	1	0	0.0	0.0	0.0	0.0	0.7	10	4	14	11	5	5	16	16	16
1988	1	1.0	20	11	31	1	0.0	0.0	0.0	0.0	16	11	27	0	1	0	0.0	0.0	0.0	0.0	1.0	11	5	16	11	4	4	15	15	15
1989	1	1.0	13	9	22	1	0.0	0.0	0.0	0.0	10	9	19	0	1	0	0.0	0.0	0.0	0.0	0.7	11	4	15	11	4	4	15	15	15
1990	1	1.0	1	2	3	1	0.0	0.0	0.0	0.0	1	2	3	0	1	0	0.0	0.0	0.0	0.0	0.7	3	4	7	3	4	4	7	7	7
TOTAL	12	12.0	270	137	407	12	.6	7.0	1.3	218	111	329	2	10	1.0	0.0	8.1	8.1	8.1	8.1	0	185	62	247						

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TABLE A-16
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYN EARTH RES
LAUNCHED FROM ETR
NON NASA

FY	CASE A										CASE B										CASE C-1										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM										
	PL	LV	T3B/	TOT	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
1983	0	0.0	38	11	49	0	0.0	0.0	0.0	0.0	38	5	43	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33	0	33	0	33
1984	0	0.0	93	26	119	0	0.0	0.0	0.0	0.0	93	12	95	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	76	0	76	0	76
1985	4	4.0	35	9	44	4	0.6	1.0	0.0	0.0	35	4	39	4	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	32	11	43	0	43	
1986	0	0.0	15	11	26	0	0.0	0.0	0.0	0.0	15	6	21	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8	0	8	0	8	
1987	0	0.0	42	25	67	0	0.0	0.0	0.0	0.0	42	12	54	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	31	0	31	0	31	
1988	4	4.0	19	10	29	4	1.3	0.0	0.0	0.0	19	4	23	2	2	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	19	12	31	0	31	
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	

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The DoD Programs portion of Table A-16
are contained in Volume VI, Classified
Addendum, pages III- A-202 thru III- A-220.

TABLE A-17
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C-2		
	CURRENT EXPENDABLE SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM		
	PAYLOAD	LNCH VEH	PROGRAM	PAYLOAD	LNCH VEH	PROGRAM	PAYLOAD	LNCH VEH	PROGRAM
	TOTAL	DIRECT	DIRECT	TOTAL	DIRECT	DIRECT	TOTAL	DIRECT	DIRECT
PHYSICS AND ASTRONOMY									
ASTRONOMY EXPL	395	101	496	395	45	440	291	40	331
RADIO EXPLORER	305	103	408	305	57	362	256	38	294
M, SPHERE L-ETR	166	41	207	166	30	196	121	25	146
M, SPHERE L-WTR	166	38	204	166	29	195	121	42	163
M, SPHERE M-ETR	164	46	210	141	65	206	119	25	144
M, SPHERE M-WTR	164	70	234	141	68	209	119	45	164
M, SPHERE UPPER	323	92	415	282	131	413	254	89	343
ORB SOLAR OBS	77	7	84	64	5	69	39	5	44
GEN RELATIVITY A	147	13	160	116	10	126	97	10	107
GEN RELATIVITY B	93	15	108	71	22	93	58	15	73
RADIO INTERFER	473	18	491	473	17	490	472	12	484
SOLAR ORBIT-A	146	27	173	146	22	168	128	15	143
SOLAR ORBIT-B	156	27	183	156	22	178	138	15	153
OPT INTERFER-A	214	14	228	214	8	222	178	3	181
OPT INTERFER-B	109	14	123	109	8	117	73	3	76
HEAO-C	1527	82	1609	1527	68	1595	1022	89	1111
L S TELESCOPE	1072	69	1141	1072	57	1129	613	52	665
LARGE SOLAR OB	1223	70	1293	1223	48	1271	738	42	780
LARGE RADIO OB	805	41	846	805	34	839	577	26	603
SUBTOTAL	7725	888	8613	7572	746	8318	5414	591	6005
EARTH OBSERVATIONS									
POLAR EARTH OB	771	84	855	629	136	765	438	63	501
SYNC EARTH OBS	276	63	345	220	39	259	179	30	209
EARTH PHYSICS	217	44	261	186	34	220	148	35	183
SYNC MET SAT	128	23	151	100	18	118	89	15	104
TIROS	57	19	76	57	15	72	65	20	85
PCLAR ERS	315	42	357	255	34	289	211	23	234
SYNC ERS	212	80	292	170	45	215	129	34	163
SUBTOTAL	1976	361	2337	1617	321	1938	1253	220	1479

TABLE A-17
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C-2		
	CURRENT EXPENDABLE SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM		
	PAYLOAD	LNCH	VEH PROGRAM	PAYLOAD	LNCH	VEH PROGRAM	PAYLOAD	LNCH	VEH PROGRAM
	TOTAL	DIRECT	DIRECT	TOTAL	DIRECT	DIRECT	TOTAL	DIRECT	DIRECT
COMMUNICATION AND NAVIGATION									
APPL TECH SAT	961	127	1088	961	87	1048	741	89	830
SMALL ATS-A	418	116	534	386	79	465	347	58	405
SMALL ATS-B	418	76	494	386	60	446	347	75	422
CCOF APPL-A	57	23	80	54	16	70	52	7	59
CCOF APPL-B	57	13	70	57	11	68	47	8	55
MED NETWORK	105	27	132	105	10	115	105	19	124
EDUC BROADCAST	134	35	169	134	12	146	134	23	157
SYSTEM DEMO	624	275	899	624	110	734	461	98	559
TRK DATA RELAY	153	137	290	153	55	208	139	67	206
SUBTOTAL	2927	829	3756	2860	440	3300	2373	444	2817
PLANETARY									
MARS VIKING	348	35	383	348	34	382	349	30	379
MARS SAMPL LDR	410	36	446	410	35	445	410	30	440
MARS SAMPL ORB	386	36	422	386	35	421	386	30	416
VENUS EXPL ORB	95	10	105	80	11	91	74	10	84
VENUS MAPPING	225	18	243	197	44	241	225	12	237
VENUS LANDER 1	224	18	242	198	17	215	182	15	197
VENUS LANDER 2	212	18	230	185	17	202	172	15	187
JUP PIONEER	137	35	172	111	34	145	137	23	160
GRAND TOUR	188	38	226	188	37	225	189	40	229
JUP ORB PROBE	213	38	251	213	37	250	212	30	242
URANUS TOPS	230	38	268	230	37	267	229	37	266
ASTEROID SURV	122	14	136	122	11	133	124	10	134
COMET RENDEZ	249	27	276	249	22	271	249	15	264
SUBTOTAL	3039	361	3400	2917	371	3288	2938	297	3235
OSSA TOTAL	15667	2439	18106	14966	1878	16844	11984	1552	13536

TABLE A-17
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE A			CASE B			CASE C-2		
	CURRENT EXPENDABLE PAYLOAD	LNCH VEH DIRECT	SYSTEM DIRECT	NEW EXPENDABLE PAYLOAD	LNCH VEH DIRECT	SYSTEM DIRECT	SPACE TRANSPORTATION SYSTEM PAYLOAD	LNCH VEH DIRECT	SYSTEM DIRECT
SPACE STATION SUPPORT									
SPACE STATION	0	262	262	0	78	78	0	61	61
EXPT SUP CARGO	2764	2931	5695	2764	2925	5689	2504	286	2790
PHYSICS LAB	245	14	259	245	11	256	199	5	204
CCSMIC RAY LAB	193	18	211	193	17	210	155	5	160
LIFE SCI LAB	227	36	263	227	35	262	142	9	151
EARTH OBS LAB	229	27	256	229	24	253	170	9	179
COMM/NAV LAB	306	27	333	306	23	329	185	9	194
SPACE MFG LAB	187	18	205	187	12	199	143	5	154
OMSF TOTAL	4151	3333	7484	4151	3125	7276	3504	389	3893
TOTAL NASA	19818	5772	25590	19117	5003	24120	15488	1941	17429
NON-NASA PROGRAMS									
COMSAT	119	151	270	119	64	183	113	77	190
DOMESTIC COMM	401	369	770	401	156	557	311	168	479
FOREIGN DOMES.	339	298	637	339	148	487	253	100	353
NAV TRFC CON A	100	97	197	100	77	177	103	56	159
NAV TRFC CON B	55	58	113	55	65	120	56	45	101
TCS MET SAT	250	76	326	250	59	309	217	92	309
SYNCH MET SAT	270	137	407	218	111	323	233	84	317
POLAR ERS	883	153	1036	721	123	844	437	122	559
SYN EARTH RES	232	92	324	232	43	275	199	28	227
NONNASA TOTAL	2649	1431	4080	2435	846	3281	1928	772	2700
NASA AND NON-NASA TOTAL	22467	7203	29670	21552	5849	27401	17416	2713	20129

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The DoD Programs portion of Table A-17
are contained in Volume VI, Classified
Addendum, pages III- A-224 and III- A-225.

TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	15	33	23	41	68	57	27	29	62	47	49	35	10	0
RADIO EXPLCER	0	0	0	0	22	69	66	17	10	50	70	31	14	5	12	29	13
M, SPHERE L-ETR	0	0	0	15	25	16	18	23	37	18	11	9	10	9	11	5	0
M, SPHERE L-MTR	0	0	0	0	15	25	16	17	23	37	18	10	9	10	9	11	4
M, SPHERE M-ETR	0	0	0	14	25	17	18	23	37	19	11	9	12	3	11	5	0
M, SPHERE M-MTR	0	0	0	0	15	27	19	20	25	40	20	13	12	13	11	14	5
M, SPHERE UPPER	0	0	0	5	31	43	36	52	52	36	29	36	37	22	20	14	2
ORB SOLAR CES	0	0	0	0	21	45	18	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	32	71	27	0	0	0	7	15	8
GEN RELATIVITY B	0	0	0	0	0	7	46	36	0	0	0	5	11	3	0	0	0
RADIO INTERFER	0	0	0	0	34	169	212	76	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	75	28	0	0	0	21	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	80	29	0	0	8	22	8	0
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	0	0	0	55	125	48	0	0
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	0	0	0	31	66	26	0	0
HEAD-C	0	38	107	161	152	128	162	160	134	100	95	84	96	80	82	30	0
L S TELESCOPE	0	0	0	28	82	128	136	103	98	89	97	90	97	82	79	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	240	265	144	118	101	118	102	113	37	0
LARGE RADIO OB	0	0	0	0	0	0	0	0	41	177	201	116	98	87	92	34	0
SUBTOTAL	0	38	107	238	455	697	843	835	880	963	783	566	647	678	599	252	32
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	24	72	77	88	109	85	64	67	82	58	44	44	34	7
SYNC EARTH OBS	0	0	0	0	15	32	34	50	28	23	31	49	28	22	14	15	4
EARTH PHYSICS	0	0	0	0	21	50	50	48	29	12	14	3	10	8	3	1	0
SYNC MET SAT	0	0	0	0	0	0	30	73	43	5	0	0	0	0	0	0	0
TROS	0	0	0	0	0	6	14	6	0	6	14	7	0	0	5	15	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	24	111	163	59	0	0	0
SYNC ERS	0	0	0	0	0	28	71	63	31	8	0	7	30	41	13	0	0
SUBTOTAL	0	0	0	24	108	193	287	349	216	118	150	265	289	174	85	65	14

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
COMMUNICATION AND NAVIGATION																		
APPL TECH SAT	0	0	0	8	48	88	121	110	86	143	131	65	56	52	83	74	17	0
SMALL ATS-A	0	0	0	0	14	45	41	46	55	44	37	45	56	44	36	37	28	6
SMALL ATS-B	0	0	0	0	14	42	37	42	53	40	33	43	52	40	34	33	26	5
COOP APPL-A	0	0	0	0	12	25	9	0	0	9	19	6	0	0	0	0	0	0
COOP APPL-B	0	0	0	0	0	0	0	11	22	8	0	0	0	0	8	15	6	0
MED NETWORK	0	0	0	0	33	73	26	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	0	42	93	34	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMC	0	0	0	0	0	0	49	117	100	80	81	80	81	80	81	77	56	17
TRK DATA RELAY	0	0	0	0	6	33	50	28	22	42	28	5	12	35	25	4	0	0
SUBTOTAL	0	0	0	8	127	348	426	388	338	372	329	244	257	251	267	240	133	28
PLANETARY																		
MARS VIKING	0	0	0	0	69	155	83	56	20	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	281	72
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	192	71
VENUS EXPL CRB	0	0	0	0	0	26	58	21	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	0	20	88	100	35	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	0	20	88	100	34	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	0	18	83	96	33	0	0
JUP PIONEER	0	0	0	0	0	0	0	17	89	66	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	0	55	124	47	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PRGBE	0	0	0	0	0	0	0	0	0	0	51	108	53	30	9	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	0	52	114	42	15	34	11	0
ASTEROID SURV	0	0	0	0	0	0	0	0	0	33	75	28	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	0	51	114	43	16	38	14	0	0	0	0	0
SUBTOTAL	0	0	0	124	305	208	233	323	197	230	326	233	155	169	350	404	143	143
OSSA TOTAL	0	38	115	513	1216	1524	1751	1845	1665	1640	1503	1321	1342	1288	1274	854	217	217

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TABLE A-10
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE A CURRENT EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	65	144	53	0	0	0	0	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	14	103	212	434	512	511	554	646	683	683	517	143
PHYSICS LAB	0	0	0	0	0	0	0	16	87	115	41	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	72	34	32	0
LIFE SCI LAB	0	0	0	0	0	13	70	90	30	0	15	33	12	0	0	0	0
EARTH OBS LAB	0	0	0	0	0	11	32	60	71	27	0	13	11	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	117	40	0	0	0	16	39	13
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	50	113	42
OMSF TOTAL	0	0	0	11	59	298	551	721	744	620	618	682	755	777	781	669	198
TOTAL NASA	0	38	115	524	1275	1822	2302	2566	2409	2260	2121	2003	2097	2065	2055	1523	415
NON-NASA PROGRAMS																	
CONSAT	0	0	0	15	33	30	18	17	32	30	18	5	12	32	23	5	0
DOMESTIC CCMH	0	0	0	0	38	55	43	44	64	77	82	76	72	72	72	53	14
FOREIGN DOMES.	0	0	0	0	13	61	102	74	43	11	25	84	100	55	31	29	9
NAV TRFC CCN A	0	0	0	15	41	32	25	14	10	8	11	8	10	9	10	4	0
NAV TRFC CCN B	0	0	0	0	4	15	17	9	10	9	10	8	11	8	10	2	0
TOS MET SAT	0	0	0	9	22	23	28	34	27	23	28	33	27	24	23	19	6
SYNCH MET SAT	0	0	0	7	24	31	37	41	36	31	36	41	36	31	31	22	3
POLAR ERS	0	0	0	70	152	97	87	81	102	79	87	40	0	51	131	59	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	49	109	44	26	67	29	0	0
NONNASA TOTAL	0	0	0	124	327	344	357	314	324	317	406	339	294	343	360	193	32
NASA AND NON-NASA TOTAL	0	38	115	648	1602	2166	2659	2880	2733	2577	2527	2342	2391	2414	2415	1716	447

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The DoD Programs portion of Table A-10
are contained in Volume VI, Classified
Addendum, pages III- A-229 and A-230.

TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	13	28	21	38	61	50	24	27	56	43	41	29	9	0
RADIO EXPLORER	0	0	0	0	13	61	60	16	9	46	62	28	14	5	9	23	10
M, SPHERE L-ETR	0	0	0	14	25	15	17	22	36	17	10	8	10	8	10	4	0
M, SPHERE L-WTR	0	0	0	0	14	25	15	17	22	36	17	10	8	10	8	9	4
M, SPHERE M-ETR	0	0	0	16	23	17	19	22	32	16	12	10	12	10	12	5	0
M, SPHERE M-WTR	0	0	0	0	16	23	17	19	23	32	12	12	10	12	11	12	5
M, SPHERE UPPER	0	0	0	10	30	42	37	48	48	37	29	33	33	22	21	18	5
ORB SOLAR OBS	0	0	0	0	17	37	15	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	25	55	22	0	0	0	5	14	5
GEN RELATIVITY B	0	0	0	0	0	8	37	26	0	0	0	5	12	5	0	0	0
RADIO INTERFER	0	0	0	0	34	168	213	75	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	33	73	27	0	0	8	19	8	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	36	78	28	0	0	8	20	8	0
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	0	0	0	54	122	46	0	0
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	0	0	0	30	63	24	0	0
HEAD-C	0	0	0	161	150	127	160	160	133	98	94	83	94	80	80	30	0
L S TELESCOPE	0	38	107	28	82	128	134	102	96	89	95	88	96	81	77	32	0
LARGE SOLAR OB	0	0	0	0	0	0	55	239	262	141	115	99	115	99	110	36	0
LARGE RADIC OB	0	0	0	0	0	0	0	0	41	177	199	115	96	87	91	33	0
SUBTOTAL	0	38	107	242	438	672	817	807	846	919	755	547	627	661	572	241	29
EARTH OBSERVATIONS																	
POLAR EARTH OB	0	0	0	22	64	69	78	93	75	59	59	70	53	41	41	33	8
SYNC EARTH CBS	0	0	0	0	11	26	26	37	22	18	24	36	21	17	10	10	1
EARTH PHYSICS	0	0	0	0	16	42	42	40	25	10	13	8	7	7	7	3	0
SYNC MET SAT	0	0	0	0	0	0	24	58	32	4	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	5	14	6	0	5	14	6	0	0	5	14	3
POLAR ERS	0	0	0	0	0	0	0	0	0	0	19	90	132	48	0	0	0
SYNC ERS	0	0	0	0	0	22	53	46	24	5	0	5	22	29	9	8	0
SUBTOTAL	0	0	0	22	91	164	237	280	178	101	129	215	235	142	72	60	12

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TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	0	8	45	84	118	110	83	142	124	61	51	50	83	73	16
SMALL ATS-A	0	0	0	0	18	38	36	37	46	38	32	38	47	38	35	32	25
SMALL ATS-E	0	0	0	0	17	36	35	37	45	37	30	37	45	36	31	32	23
COOP APPL-A	0	0	0	0	12	23	8	0	0	7	15	4	0	0	0	0	1
COOP APPL-B	0	0	0	0	0	0	0	10	23	8	0	0	0	0	7	15	5
MEC NETWORK	0	0	0	0	29	63	23	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	0	36	81	29	0	0	0	0	0	0	0	0	0
SYSTEM DEMC	0	0	0	0	0	0	45	104	85	62	65	63	65	63	65	60	44
TRK DATA RELAY	0	0	0	0	5	24	37	20	16	31	21	4	7	23	17	3	0
SUBTOTAL	0	0	0	8	126	304	383	347	298	325	287	207	215	210	238	215	113
PLANETARY																	
MARS VIKING	0	0	0	0	69	155	82	55	21	0	0	0	0	0	0	0	0
MARS SAMPL LCR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	147	200
MARS SAMPL CRB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	136	191
VENUS EXPL CRB	0	0	0	0	0	23	50	18	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	0	18	85	105	33	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	0	17	78	90	30	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	0	16	73	85	28	0
JUP PIONEER	0	0	0	0	0	0	0	14	76	55	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	0	54	123	48	0	0	0	0	0	0	0	0	0	0
JUP ORB PROB	0	0	0	0	0	0	0	0	0	0	51	108	52	23	10	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	0	52	114	41	15	33	12
ASTEROID SURV	0	0	0	0	0	0	0	0	0	33	73	27	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	0	51	112	42	16	36	14	0	0	0	0
SUBTOTAL	0	0	0	0	123	301	198	223	314	180	218	313	226	143	159	344	403
OSSA TOTAL	0	38	115	513	1134	1417	1624	1699	1529	1525	1404	1203	1215	1200	1203	817	208

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TABLE A-11
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE B NEW EXPENDABLE SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	10	21	8	0	10	21	8	0	0	0	0
EXPT SUP CARGO	0	0	0	0	0	14	103	212	434	511	511	552	646	682	682	517	143
PHYSICS LAB	0	0	0	0	0	0	0	16	87	113	40	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	0	13	72	34	31	0
LIFE SCI LAB	0	0	0	0	0	13	69	91	29	0	15	32	13	0	0	0	0
EARTH OBS LAB	0	0	0	0	11	32	60	70	26	0	13	30	11	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	0	18	90	115	39	0	0	0	0	16	37
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	49	110
OMSF TOTAL	0	0	0	11	59	242	428	674	739	739	628	635	691	754	776	778	664
TOTAL NASA	0	38	115	524	1193	1659	2052	2373	2268	2153	2039	1894	1969	1976	1981	1481	405
NON-NASA PROGRAMS																	
COMSAT	0	0	0	12	25	21	12	10	21	19	12	3	8	22	15	3	0
DOMESTIC COMH	0	0	0	6	26	37	31	32	46	55	61	57	54	52	52	37	11
FOREIGN DOMES.	0	0	0	0	10	46	76	57	34	9	19	64	75	42	26	23	6
NAV TRFC CCN A	0	0	0	11	31	27	21	12	11	9	11	9	11	8	11	5	0
NAV TRFC CCN B	0	0	0	0	5	15	19	9	11	8	11	9	11	9	11	2	0
TOS MET SAT	0	0	0	6	21	22	27	32	26	22	26	31	26	22	22	18	6
SYNC MET SAT	0	0	0	4	18	25	29	31	27	26	28	35	30	27	27	19	3
POLAR ERS	0	0	0	55	124	79	71	67	84	55	71	33	0	41	107	47	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	43	95	39	21	54	23	0	0
NONNASA TOTAL	0	0	0	96	260	272	286	250	260	256	334	280	236	277	294	154	26
NASA AND NON-NASA TOTAL	0	38	115	620	1453	1931	2338	2623	2528	2409	2373	2174	2205	2253	2275	1635	431

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The DoD Programs portion of Table A-11
are contained in Volume VI, Classified
Addendum, pages III- A-234 and III- A-235.

TABLE A-18
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-2 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	11	25	22	27	44	36	22	20	34	27	25	27	11	0
RADIO EXPLORER	0	0	0	0	15	52	58	18	7	37	53	22	3	7	1	8	13
M, SPHERE L-ETR	0	0	0	8	18	16	15	19	27	15	6	5	3	6	3	5	0
M, SPHERE L-WTR	0	0	0	0	8	18	17	16	23	27	10	6	8	3	8	3	8
M, SPHERE M-ETR	0	0	0	9	17	16	14	19	26	15	5	5	3	6	4	4	0
M, SPHERE M-WTR	0	0	0	0	9	18	19	15	23	27	17	5	9	3	8	4	7
M, SPHERE UPPER	0	0	0	3	26	40	34	44	43	34	23	24	24	15	16	11	6
ORB SOLAR CES	0	0	0	0	9	21	14	0	0	0	0	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	18	45	22	0	0	0	1	9	12
GEN RELATIVITY B	0	0	0	0	0	5	28	26	0	0	0	2	5	7	0	0	0
RADIO INTERFER	0	0	0	0	34	145	202	103	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	26	60	26	0	0	5	13	11	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	29	65	29	0	0	5	14	11	0
SOLAR ORBIT-C	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPT INTERFER-A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
OPT INTERFER-B	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
HEAD-C	0	26	79	124	127	80	99	146	79	39	70	73	22	39	19	0	0
L S TELESCOPE	0	0	0	20	60	100	114	65	28	30	80	85	28	26	59	57	5
LARGE SOLAR OR	0	0	0	0	0	0	39	180	212	85	20	19	18	99	96	7	5
LARGE RADIO OR	0	0	0	0	0	0	0	0	41	173	189	83	32	35	26	16	8
SUBTOTAL	0	26	79	175	348	533	680	695	618	674	580	364	242	404	353	165	69
EARTH OBSERVATIONS																	
POLAR EARTH OR	0	0	0	23	63	50	50	65	48	35	34	42	26	16	19	19	11
SYNC EARTH ORS	0	0	0	0	10	21	24	31	19	15	21	28	17	9	7	3	4
EARTH PHYSICS	0	0	0	0	14	36	36	32	21	12	8	9	2	6	2	5	0
SYNC MET SAT	0	0	0	0	0	0	18	48	32	6	0	0	0	0	0	0	0
TROS	0	0	0	0	0	9	23	14	0	4	11	10	0	0	0	5	9
POLAR ERS	0	0	0	0	0	0	0	0	0	0	12	64	106	52	0	0	0
SYNC ERS	0	0	0	0	0	17	45	39	23	7	0	0	4	16	12	0	0
SUBTOTAL	0	0	0	23	87	133	196	229	143	79	86	153	155	99	40	32	24

TABLE A-18
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-2 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
COMMUNICATION AND NAVIGATION																	
APPL TECH SAT	0	0	6	38	71	98	86	73	116	109	43	38	38	33	53	28	0
SMALL ATS-A	0	0	0	13	32	33	36	43	34	29	30	38	32	27	25	23	10
SMALL ATS-E	0	0	0	15	37	35	38	43	35	32	31	38	32	27	27	21	11
COOP APPL-A	0	0	0	8	17	10	0	0	6	12	6	0	0	0	0	0	0
COOP APPL-E	0	0	0	0	0	0	15	12	7	0	0	0	0	4	10	7	0
MED NETWORK	0	0	0	27	67	30	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	31	81	45	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	37	85	79	62	62	46	33	36	35	33	33	18
TRK DATA RELAY	0	0	0	6	28	31	22	16	26	25	5	11	7	21	8	0	0
SUBTOTAL	0	0	6	107	283	355	327	266	286	269	161	158	145	147	156	112	39
PLANETARY																	
MARS VIKING	0	0	0	62	152	90	50	25	0	0	0	0	0	0	0	0	0
MARS SAMPL LDR	0	0	0	0	0	0	0	0	0	0	0	0	0	26	127	183	104
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	23	115	175	103
VENUS EXPL CRB	0	0	0	0	18	44	22	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	20	80	92	45	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	16	64	76	41	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	14	59	73	41	0	0
JUP PIONEER	0	0	0	0	0	0	9	77	74	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	52	124	53	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	42	99	61	22	18	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	42	103	63	10	23	25	0
ASTEROID SURV	0	0	0	0	0	0	0	0	28	70	36	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	44	107	53	13	30	17	0	0	0	0	0
SUBTOTAL	0	0	0	114	294	207	205	301	216	189	283	236	144	150	306	383	207
OSSA TOTAL	0	26	85	419	1012	1228	1408	1491	1263	1211	1110	911	686	800	855	692	339

TABLE A-18
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE C-2 SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	0	19	0	0	4	14	15	9	0	0	0
EXPT SUP CARSO	0	0	0	0	10	57	68	141	238	245	267	293	310	327	328	327	179
PHYSICS LAB	0	0	0	0	0	0	16	72	82	34	0	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	13	59	63	25	0	0
LIFE SCI LAB	0	0	0	0	10	45	52	23	0	0	9	12	0	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	49	43	23	0	0	9	12	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	12	58	68	28	0	0	0	0	0	12	16
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	82	35
OMSF TOTAL	0	0	0	11	52	151	191	336	388	307	289	344	384	399	390	421	230
TOTAL NASA	0	26	85	430	1064	1379	1599	1827	1651	1518	1399	1255	1070	1199	1245	1113	569
NON-NASA PROGRAMS																	
COMSAT	0	0	0	12	29	20	16	17	20	27	14	6	0	6	15	8	0
DOMESTIC COMM	0	0	0	9	26	43	41	35	49	69	47	30	26	27	27	38	20
FOREIGN DOMES.	0	0	0	0	10	42	66	56	31	13	3	24	42	35	13	13	11
NAV TRFC CCN A	0	0	0	12	31	29	22	14	9	10	5	7	3	8	3	6	0
NAV TRFC CCN B	0	0	0	0	6	17	20	11	7	10	4	7	2	7	2	8	0
TOS MET SAT	0	0	0	7	20	25	45	34	31	27	24	21	18	16	16	17	8
SYNCH MET SAT	0	0	0	6	22	24	46	36	31	28	25	20	19	15	16	17	12
POLAR ERS	0	0	0	49	115	56	36	48	38	48	24	43	0	1	37	64	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	33	76	46	8	31	33	0	0
NONNASA TOTAL	0	0	0	95	259	256	292	251	216	265	222	204	118	146	162	163	51
NASA AND NON-NASA	0	26	85	525	1323	1635	1891	2078	1867	1783	1621	1459	1188	1345	1407	1276	620
TOTAL	0	26	85	525	1323	1635	1891	2078	1867	1783	1621	1459	1188	1345	1407	1276	620

The DoD Programs portion of Table A-18
are contained in Volume VI, Classified
Addendum, pages III- A-239 and III- A-240.

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTRONOMY EXPL
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					DIR										
	PL	LV	TAT3	TOT	DIR	PL	LV	5/2/	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	12	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	25	8	33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	2	2.0	19	4	23	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	0	0.0	34	7	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	56	12	68	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	2	2.0	45	12	57	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	2	2.0	20	7	27	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	1	1.0	25	4	29	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	0	0.0	52	10	62	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	2	2.0	38	7	47	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	1	1.0	36	13	49	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	2	2.0	25	10	35	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	2	2.0	8	2	10	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
RADIO EXPLORER
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM									
	PL					LV					LV					LV					LV					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0
1978	0	0.0	16	6	22	0	0.0	0.0	0.0	16	3	19	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	13	2
1979	0	0.0	54	15	69	0	0.0	0.0	0.0	54	7	61	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	48	4
1980	2	2.0	55	11	66	2	1.0	0.0	0.0	55	5	60	2	0	1	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	50	8
1981	1	1.0	15	2	17	1	0.0	0.3	0.0	15	1	16	1	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	15	3
1982	0	0.0	7	3	10	0	0.0	0.0	0.0	7	2	9	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	6	1
1983	0	0.0	38	12	50	0	0.0	0.0	0.0	38	8	46	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	35	2
1984	1	1.0	55	15	70	1	0.0	0.0	0.0	55	7	62	1	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	50	3
1985	2	2.0	23	8	31	2	1.0	0.0	0.0	23	5	28	2	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	17	5
1986	0	0.0	8	6	14	0	0.0	0.0	0.0	8	6	14	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	3	0
1987	1	1.0	3	2	5	1	1.0	0.0	0.0	3	2	5	0	0	1	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	3	4
1988	0	0.0	6	6	12	0	0.0	0.0	0.0	6	3	9	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	1	0
1989	0	0.0	17	12	29	0	0.0	0.0	0.0	17	6	23	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	8	0
1990	2	2.0	8	5	13	2	0.0	0.6	0.0	8	2	10	0	0	2	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	7	6
TOTAL	9	9.0	305	103	408	9	3.0	.9	.5	305	57	362	6	3	2	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	256	38

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE L-ETR
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-2				CASE C-2				CASE C-2			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	TOT	DIR	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV
	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3	TAI3
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	13	2	15	0	0.0	0.0	13	1	14	0	0	0.0	0.0	0.0	0	7	1	8
1978	0	0.0	22	3	25	0	0.0	0.0	22	3	25	0	0	0.0	0.0	0.0	0	16	2	18
1979	1	1.0	13	3	16	1	1.0	0.0	13	2	15	1	0	0.0	0.0	0.0	0	12	4	16
1980	0	0.0	14	4	18	0	0.0	0.0	14	3	17	0	0	0.0	0.0	0.0	0	13	2	15
1981	1	1.0	20	3	23	1	1.0	0.0	20	2	22	1	0	0.0	0.0	0.0	0	16	3	19
1982	0	0.0	33	4	37	0	0.0	0.0	33	3	36	0	0	0.0	0.0	0.0	0	25	2	27
1983	1	1.0	15	3	18	1	1.0	0.0	15	2	17	1	0	0.0	0.0	0.0	0	12	3	15
1984	0	0.0	7	4	11	0	0.0	0.0	7	3	10	0	0	0.0	0.0	0.0	0	6	0	6
1985	1	1.0	6	3	9	1	1.0	0.0	6	2	8	1	0	0.0	0.0	0.0	0	2	3	5
1986	0	0.0	7	3	10	0	0.0	0.0	7	3	10	0	0	0.0	0.0	0.0	0	3	0	3
1987	1	1.0	6	3	9	1	1.0	0.0	6	2	8	0	1	0.0	0.0	0.0	0	3	3	6
1988	0	0.0	7	4	11	0	0.0	0.0	7	3	10	0	0	0.0	0.0	0.0	0	3	0	3
1989	1	1.0	3	2	5	1	1.0	0.0	3	1	4	0	1	0.0	0.0	0.0	0	3	2	5
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE M-ETR
Ossa
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	PL	LV	TAT9	TOT	DIR	PL	LV	5/2/	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE M-MTR
LAUNCHED FROM MTR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					TUG				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	12	3	15	0	0.0	0.0	0.0	13	3	16	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1979	0	0.0	21	6	27	0	0.0	0.0	0.0	17	6	23	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1980	1	1.0	13	6	19	1	1.0	0.0	0.0	12	5	17	1	0	1	0	1.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
1981	0	0.0	14	6	20	0	0.0	0.0	0.0	13	6	19	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1982	1	1.0	20	5	25	1	1.0	0.0	0.0	17	6	23	1	0	1	0	1.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
1983	0	0.0	33	7	40	0	0.0	0.0	0.0	26	6	32	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1984	1	1.0	15	5	20	1	1.0	0.0	0.0	12	5	17	1	0	1	0	1.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
1985	0	0.0	7	6	13	0	0.0	0.0	0.0	6	6	12	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1986	1	1.0	6	6	12	1	1.0	0.0	0.0	5	5	10	1	0	1	0	0.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
1987	0	0.0	7	6	13	0	0.0	0.0	0.0	6	6	12	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1988	1	1.0	6	5	11	1	1.0	0.0	0.0	5	6	11	0	1	0	1	0.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
1989	0	0.0	7	7	14	0	0.0	0.0	0.0	6	6	12	0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0
1990	1	1.0	3	2	5	1	1.0	0.0	0.0	3	2	5	0	1	0	1	0.0	0.0	1.0	0	0	0	1.0	0.0	0	0	0	0	0	0
TOTAL	6	6.0	164	70	234	6	6.0	0.0	0.0	141	68	209	4	2	3	0	0.0	6.0	6.0	3.0	0	119	45	164						

III. A-246

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE UPPER
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	FL	TOT	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
YAT3	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	TOT	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
/D/T																				NEW	REF	A	SHL	TUG	EXP	TOT	DIR	DIR	DIR
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	3	2	5	0	0.0	0.0	0.0	7	3	8	10	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	25	6	31	0	0.0	0.0	0.0	22	8	30	30	30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	35	8	43	1	1.0	0.0	0.0	31	11	42	42	42	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	29	7	36	1	1.0	0.0	0.0	26	11	37	37	37	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	44	8	52	1	1.0	0.0	0.0	37	11	48	48	48	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	44	8	52	1	1.0	0.0	0.0	37	11	48	48	48	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	29	7	36	1	1.0	0.0	0.0	26	11	37	37	37	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	21	8	29	1	1.0	0.0	0.0	18	11	29	29	29	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	29	7	36	1	1.0	0.0	0.0	22	11	33	33	33	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	29	8	37	1	1.0	0.0	0.0	22	11	33	33	33	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	14	8	22	1	1.0	0.0	0.0	11	11	22	22	22	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	13	7	20	1	1.0	0.0	0.0	11	10	21	21	21	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	8	6	14	1	1.0	0.0	0.0	9	9	18	18	18	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	0	2	2	1	1.0	0.0	0.0	3	2	5	5	5	1	0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	12	12.0	323	92	415	12	12.0	0.0	0.0	282	131	413	413	413	12	0	6.0	0.0	12.0	6.0	0	254	83	343					

III-A-247

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GEN RELATIVITY A
LAUNCHED FROM WTR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2				
	PL	LV	TAT3	TOT	DIR	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	\$	\$	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	30	2	32	0	0.0	0.0	0.0	0.0	24	1	25	0	0	0	0.0	0.0	0.0	0.0	0	17	1	18	0	0	0	0	0	0
1983	0	0.0	68	3	71	0	0.0	0.0	0.0	0.0	52	3	55	0	0	0	0.0	0.0	0.0	0.0	0	44	1	45	0	0	0	0	0	0
1984	1	1.0	26	1	27	1	1.0	0.0	0.0	0.0	21	1	22	1	0	0	0.0	0.0	0.0	0.0	0	19	3	22	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	5	2	7	0	0.0	0.0	0.0	0.0	4	1	5	0	0	0	0.0	0.0	0.0	0.0	0	1	0	1	0	0	0	0	0	0
1989	0	0.0	12	3	15	0	0.0	0.0	0.0	0.0	11	3	14	0	0	0	0.0	0.0	0.0	0.0	0	9	0	9	0	0	0	0	0	0
1990	1	1.0	6	2	8	1	1.0	0.0	0.0	0.0	4	1	5	0	0	1	0.0	0.0	1.0	0.0	0	7	5	12	0	0	0	0	0	0
TOTAL	2	2.0	147	13	160	2	2.0	0.0	0.0	0.0	116	10	126	1	1	1	0.0	0.0	1.5	0.0	0	97	10	107	0	0	0	0	0	0

III-A-249

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GEN RELATIVITY B
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
	PL	LV	TAT3	TOT	DIR	PL	LV	5/2/	FL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-250

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
RADIO INTERFER
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV PROG											
	PL	LV	PL	LV	PL	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
	T3F/	TOT	DIR	DIR	DIR	T3F/	TOT	DIR	DIR	DIR	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1978	0	0.0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0	34	0
1979	0	0.0	164	5	169	0	164	4	168	0	164	4	168	0	164	4	168	0	164	4	168	0	164	4	168	0	164	4	168	0	164	4
1980	0	0.0	203	3	212	0	203	10	213	0	203	10	213	0	203	10	213	0	203	10	213	0	203	10	213	0	203	10	213	0	203	10
1981	1	1.0	72	4	76	1	72	3	75	1	72	3	75	1	72	3	75	1	72	3	75	1	72	3	75	1	72	3	75	1	72	3
1982	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

III-A-251

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SOLAR ORBIT-A
LAUNCHED FROM ETR

FY	CASE A				CASE B				CASE C-2														
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM														
	PL	LV	PL	LV	PL	LV	LV	LV	PL	LV	LV	LV	PL	LV	LV	LV	TUG	TUG	PL	LV	PL	LV	PROG
	13C	TOT	DIR	DIR	5/2/	NO	NO	NO	NO	TOT	DIR	DIR	NO	NO	NO	NO	NO	NO	NO	NO	TOT	DIR	DIR
	NO	NO	\$	\$	NO	NO	NO	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	\$	\$	\$	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1982	0	0.0	30	3	33	0	0.0	0.0	0.0	30	3	33	0	0	0.0	0.0	0.0	0.0	0	25	1	26	0
1983	0	0.0	67	8	75	0	0.0	0.0	0.0	67	6	73	0	0	0.0	0.0	0.0	0.0	0	57	3	60	0
1984	1	1.0	25	3	28	1	1.0	0.0	0.0	25	2	27	1	0	1.0	0.0	1.0	0.0	0	22	6	28	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	5	3	8	0	0.0	0.0	0.0	5	3	8	0	0	0.0	0.0	0.0	0.0	0	5	0	5	0
1988	0	0.0	13	8	21	0	0.0	0.0	0.0	13	6	19	0	0	0.0	0.0	0.0	0.0	0	13	0	13	0
1989	1	1.0	6	2	8	1	1.0	0.0	0.0	6	2	8	1	0	0.0	0.0	1.0	1.0	0	6	5	11	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0

III- A-2521

III- A-2521

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OPT INTERFER.A
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																			
	PL					LV					PL					LV					PL					LV					PL					LV				
	T3C	TOT	DIR	PROG	DIR	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG	T3C/	TOT	DIR	PROG							
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1986	0	0.0	52	3	55	0	0.0	0.0	0.0	52	2	54	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1987	0	0.0	117	8	125	0	0.0	0.0	0.0	117	5	122	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1988	1	1.0	45	3	48	1	.5	0.0	0.0	45	1	46	1	0	0.0	0.0	0.0	.5	.5	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0							
TOTAL	1	1.0	214	14	228	1	.5	0.0	0.0	214	8	222	1	0	0.0	0.0	.5	.5	0	178	3	181																		

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
CPT INTERFER.B
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T3C	TCT	DIR	PL	LV	PROG	DIR	\$	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974										1975										1976									
0	0.0	0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1986	0	0.0	28	3	31	0	0	0	0	28	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1987	0	0.0	58	8	66	0	0	0	0	58	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1988	1	1.0	23	3	26	1	.5	0.0	0.0	23	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1	0	0.0	0.0	.5	.5	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0
TOTAL										TOTAL										TOTAL									
1	1.0	109	14	123	1	.5	0.0	0.0	109	8	117	1	0	0.0	0.0	.5	.5	.5	.5	0	73	3	76						

III-A-255

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
HEAD-C
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP				
	PL	LV	T3C	TOT	DIR	PL	LV	T3D/	TOT	DIR	PL	LV	NO	NO	NO	PL	LV	NO	NO	NO	PL	LV	NO	NO	NO	PL	LV	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1975	0	0.0	38	0	38	0	0.0	0.0	38	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1976	0	0.0	107	0	107	0	0.0	0.0	107	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1977	0	0.0	158	3	161	0	0.0	0.0	158	3	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1978	0	0.0	144	8	152	0	0.0	0.0	144	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1979	1	1.0	122	5	127	1	1.0	0.0	122	5	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	1
1980	0	0.0	154	8	162	0	0.0	0.0	154	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1981	1	1.0	154	6	160	1	1.0	0.0	154	6	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	1
1982	0	0.0	127	7	134	0	0.0	0.0	127	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1983	1	1.0	93	7	100	1	1.0	0.0	93	5	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1984	0	0.0	88	7	95	0	0.0	0.0	88	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1985	1	1.0	78	6	84	1	1.0	0.0	78	5	0	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	0.0	1	0.0	0.0	0.0	1
1986	0	0.0	88	8	96	0	0.0	0.0	88	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1987	1	1.0	74	6	80	1	1.0	0.0	74	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1988	0	0.0	74	8	82	0	0.0	0.0	74	6	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1989	1	1.0	28	2	30	1	1.0	0.0	28	2	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0
TOTAL	6	6.0	1527	82	1609	6	6.0	0.0	1527	68	1595	2	2	0.0	0.0	19.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0

III-A.256

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
L S TELESCOPE
LAUNCHED FROM EIR

FY	CASE A				CASE B				CASE C-2			
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
	PL	LV	T3C	TOT DIR	PL	LV	LV	TOT DIR	PL	LV	LV	TOT DIR
1974	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0
1977	0	0.0	28	28	0	0.0	0.0	28	0	0.0	0.0	20
1978	0	0.0	82	82	0	0.0	0.0	82	0	0.0	0.0	60
1979	0	0.0	125	125	0	0.0	0.0	125	0	0.0	0.0	100
1980	0	0.0	128	128	0	0.0	0.0	128	0	0.0	0.0	114
1981	1	1.0	97	97	1	1.0	0.0	97	1	0.0	0.0	63
1982	0	0.0	30	30	0	0.0	0.0	30	0	0.0	0.0	23
1983	1	1.0	83	83	1	1.0	0.0	83	0	0.0	0.0	25
1984	0	0.0	90	90	0	0.0	0.0	90	0	0.0	0.0	76
1985	1	1.0	83	83	1	1.0	0.0	83	0	0.0	0.0	78
1986	0	0.0	90	90	0	0.0	0.0	90	0	0.0	0.0	23
1987	1	1.0	76	76	1	1.0	0.0	76	0	0.0	0.0	20
1988	0	0.0	71	71	0	0.0	0.0	71	0	0.0	0.0	8
1989	1	1.0	29	29	1	1.0	0.0	29	0	0.0	0.0	3
1990	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0
TOTAL	5	5.0	1072	63 1141	5	5.0	0.0	57 1129	1	1	0.0	613 52
												665

III-A-257

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE SOLAR OB
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM												
	C					B																											
	PL	LV	T3D/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	TOT	DIR	PROG	DIR	PL	LV	LV	LV	SHL	TUG	TUG	LV	LV	TOT	PL	LV	LV	LV	PROG	DIR	
1974	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1975	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1976	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1977	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1978	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1979	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1980	0	0.0		55	0	55	0.0	0.0	0.0	0.0	0.0	55	0	55	0	55	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1981	0	0.0		236	4	240	0.0	0.0	0.0	0.0	0.0	236	3	239	0	239	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	39	0	39	0	180	0	180
1982	0	0.0		255	10	265	0.0	0.0	0.0	0.0	0.0	255	7	262	0	262	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	212	0	212	0	212	0	212
1983	1	1.0		136	8	144	1.0	0.0	0.0	0.0	0.0	136	5	141	1	141	1	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	80	5	85	0	85	0	85
1984	0	0.0		108	10	118	0.0	0.0	0.0	0.0	0.0	108	7	115	0	115	0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0	13	7	20	0	20	0	20
1985	1	1.0		94	7	101	1.0	0.0	0.0	0.0	0.0	94	5	99	0	99	0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	15	4	19	0	19	0	19
1986	0	0.0		108	10	118	0.0	0.0	0.0	0.0	0.0	108	7	115	0	115	0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	13	5	18	0	18	0	18
1987	1	1.0		94	8	102	1.0	0.0	0.0	0.0	0.0	94	5	99	0	99	0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	94	5	99	0	99	0	99
1988	0	0.0		103	10	113	0.0	0.0	0.0	0.0	0.0	103	7	110	0	110	0	1.0	0.0	0.0	0.0	1.5	0.0	0.0	0.0	0	89	7	96	0	96	0	96
1989	1	1.0		34	3	37	1.0	0.0	0.0	0.0	0.0	34	2	36	0	36	0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	3	4	7	0	7	0	7
1990	0	0.0		0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0	0	5	5	0	5	0	5
TOTAL	4	4.0	1223	70	1293	4	1293	4	1293	4	1293	4	1223	48	1271	1	1271	1	1.0	0.0	0.0	9.0	0.0	0.0	0.0	0	738	42	780	0	780	0	780

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE RADIO CB
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	PL		LV		T3C	TOT DIR		PROG		DIR	PL		LV		TOT DIR	PROG		DIR	PL		LV		REF	PL		LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV		NO	LV	

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	TOT	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG	PL	LV	PROG
138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/	138/
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	12	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	26	6	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	29	5	34	1	.4	0.0	0.0	0.0	0.0	22	24	2	26	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	43	7	50	0	0	0	0	0	0	34	34	3	37	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	23	5	28	1	.3	0.0	0.0	0.0	0.0	19	19	3	22	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	17	6	23	0	0	0	0	0	0	14	14	4	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	26	5	31	1	0.0	.4	0.0	0.0	0.0	21	21	3	24	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	43	6	49	0	0	0	0	0	0	33	33	3	36	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	22	6	28	1	0.0	.4	0.0	0.0	0.0	18	18	3	21	1	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	16	6	22	0	0	0	0	0	0	13	13	4	17	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	9	5	14	1	0.0	.4	0.0	0.0	0.0	7	7	3	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	9	6	15	0	0	0	0	0	0	6	6	4	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	1	3	4	1	0.0	.4	0.0	0.0	0.0	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL										TOTAL										TOTAL									
6	6.0	276	69	345	6	.7	1.6	0.0	220	39	259	4	2	1.5	0.0	3.9	2.4	0	179	30	209								

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EARTH PHYSICS
LAUNCHED FROM WTR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	TAT3	PL	LV	PL	LV	PL	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	REF	C	A	SHTL	TUG	TUG	TUG	DIR	DIR	DIR
\$										\$										\$									
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	19	2	21	0	0.0	0.0	0.0	15	1	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	45	5	50	0	0.0	0.0	0.0	38	4	42	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	44	6	50	1	1.0	0.0	0.0	37	5	42	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	42	6	48	1	1.0	0.0	0.0	35	5	40	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	24	5	29	1	1.0	0.0	0.0	21	4	25	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	9	3	12	1	1.0	0.0	0.0	8	2	10	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	11	3	14	0	0.0	0.0	0.0	10	3	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	6	3	9	1	1.0	0.0	0.0	6	2	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	6	4	10	0	0.0	0.0	0.0	5	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	5	3	8	1	1.0	0.0	0.0	4	3	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	6	3	9	0	0.0	0.0	0.0	5	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	0	1	1	1	1.0	0.0	0.0	2	1	3	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	7.0	217	44	261	7	7.0	0.0	0.0	186	34	220	3	4	.5	6.0	0.0	0	148	35	183								

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2					
	PL	LV	TOT	LV	PROG	PL	LV	LV	LV	PROG	PL	LV	LV	LV	PROG	PL	LV	LV	LV	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV
	138/	139/	140/	141/	142/	143/	144/	145/	146/	147/	148/	149/	150/	151/	152/	153/	154/	155/	156/	157/	158/	159/	160/	161/	162/	163/	164/	165/	166/	167/	168/
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1980	0	0.0	27	3	30	0	0.0	0.0	0.0	0.0	21	3	24	0	0	0	0.0	0.0	0.0	0.0	0	17	1	18	0	0	0	0	0	0	0
1981	0	0.0	64	9	73	0	0.0	0.0	0.0	0.0	50	8	58	0	0	0	0.0	0.0	0.0	0.0	0	44	4	48	0	0	0	0	0	0	0
1982	1	1.0	34	5	43	1	1.0	0.0	0.0	0.0	26	6	32	1	0	0	0.0	0.0	0.0	0.0	0	25	7	32	0	0	0	0	0	0	0
1983	1	1.0	3	2	5	1	0.0	0.0	0.0	0.0	3	1	4	1	0	0	0.0	0.0	0.0	0.0	0	3	3	6	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0

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TOTAL 2 2.0 128 23 151 2 1.0 .4 0.0 100 18 118 2 0 1.0 .5 1.5 0.0 0 89 15 104

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TIROS
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM										LV PROG DIR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
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III. A-264

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
POLAR ERS
LAUNCHED FROM WTR

CASE A										CASE B										CASE C-2										
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM										
PL	LV	TAT9	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR
/D/T										T3D/B										EXP										
NO	NO	\$	\$	\$	\$	\$	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1984	0	0.0	21	3	24	0	0	0	0	0	0.0	0.0	0.0	0.0	16	3	19	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1985	0	0.0	96	15	111	0	0	0	0	0	0.0	0.0	0.0	0.0	78	12	90	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1986	2	2.0	145	18	163	2	1.0	0.0	0.0	0.0	0.0	0.0	0.0	118	14	132	2	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1987	4	4.0	53	6	59	4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	43	5	48	4	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
TOTAL	6	6.0	315	42	357	6	3.0	0.0	0.0	0.0	0.0	0.0	0.0	255	34	289	6	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0

III-A-265

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
APOL TECH SAT
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	8	0	8	0	0.0	0.0	0.0	0.0	8	0	8	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	43	5	48	0	0.0	0.0	0.0	0.0	43	2	45	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	73	3	88	0	0.0	0.0	0.0	0.0	79	5	84	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	112	9	121	1	.5	0.0	0.0	0.0	112	6	118	1	0	1.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	100	10	110	0	0.0	0.0	0.0	0.0	100	10	110	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	78	8	86	1	1.0	0.0	0.0	0.0	78	5	83	1	0	1.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	135	14	149	0	0.0	0.0	0.0	0.0	135	7	142	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	117	14	131	1	.5	0.0	0.0	0.0	117	7	124	1	0	1.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	57	8	65	1	.5	0.0	0.0	0.0	57	4	61	1	0	1.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	46	10	56	0	0.0	0.0	0.0	0.0	46	5	51	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	44	8	52	1	.5	0.0	0.0	0.0	44	6	50	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	69	14	83	0	0.0	0.0	0.0	0.0	69	14	83	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	60	14	74	1	1.0	0.0	0.0	0.0	60	13	73	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	13	4	17	1	1.0	0.0	0.0	0.0	13	3	16	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	7	7.0	361	127	1088	7	5.0	0.0	0.0	0.0	961	87	1048	4	3	4.0	0.0	0.0	0.0	0.0	8.0	0	0	0	0	0	0	0	0	0

TOTAL 7 7.0 361 127 1088 7 5.0 0.0 0.0 0.0 0.0 961 87 1048 4 3 4.0 0.0 0.0 0.0 0.0 0.0 8.0 0 741 89 830

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-B
LAUNCHED FROM WTR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM									
	PL					LV					FL					LV					FL					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	12	2	14	0	0.0	0.0	0.0	0.0	16	1	17	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	37	5	42	0	0.0	0.0	0.0	0.0	32	4	36	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	31	6	37	1	1.0	0.0	0.0	0.0	30	5	35	1	0	1.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	36	6	42	1	1.0	0.0	0.0	0.0	32	5	37	1	0	0.0	1.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	46	7	53	1	1.0	0.0	0.0	0.0	40	5	45	1	0	0.0	.5	.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	34	6	40	1	0.0	.5	0.0	.5	31	6	37	1	0	0.0	.5	.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	27	6	33	1	1.0	0.0	0.0	0.0	26	4	30	1	0	0.0	1.0	1.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	36	7	43	1	1.0	0.0	0.0	0.0	32	5	37	1	0	0.0	.5	.5	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	46	6	52	1	1.0	0.0	0.0	0.0	40	5	45	1	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	34	6	40	1	1.0	0.0	0.0	0.0	31	5	36	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	27	7	34	1	1.0	0.0	0.0	0.0	26	5	31	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	27	6	33	1	1.0	0.0	0.0	0.0	26	6	32	0	1	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	21	5	26	1	0.0	.5	0.0	.5	20	3	23	0	1	0.0	0.0	0.0	0.0	.5	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	4	1	5	1	1.0	0.0	0.0	0.0	4	1	5	0	0	0.0	0.0	0.0	0.0	1.0	0	0	0	0	0	0	0	0	0	0
TOTAL	12	12.0	418	76	494	12	10.0	1.0	0.0	0.0	386	60	446	7	5	1.0	3.5	9.0	5.5	0	347	75	422							

III-A-269

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-A
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T38/	TOT	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR	DIR
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	9	3	12	0	0	0	0	9	3	12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	19	6	25	0	0	0	0	17	6	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	7	2	9	1	1.0	0.0	0.0	6	2	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	6	3	9	0	0	0	0	6	1	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	12	7	19	0	0	0	0	12	3	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	4	2	6	1	0.0	0.0	0.0	3	1	4	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	2	2.0	57	23	80	2	1.0	.3	0.0	54	16	70	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

III. A. 270

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-B
LAUNCHED FROM WTR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
	PL	LV	TAT3	TOT	DIR	PL	LV	5/2/	FL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III. A-271

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MED NETWORK
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
PL	LV	T3C	TOT	DIR	PL	LV	T3C/	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-272

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EDUC BROADCAST
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$	NO	NO	NO	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1978	0	0.0	33	9	42	0	0.0	0.0	0.0	33	3	3	3	36	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	28	3	31	8	31
1979	0	0.0	74	19	93	0	0.0	0.0	0.0	74	7	7	81	81	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	73	8	81	12	81
1980	2	2.0	27	7	34	2	.7	0.0	0.0	27	2	2	29	29	2	2	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	33	12	45	0	45
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0
TOTAL	2	2.0	134	35	169	2	.7	0.0	0.0	134	12	146	2	0	2.0	0.0	2.0	0.0	2.0	0.0	134	23	157	0	0	0	0	0	0	0

III-A-273

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYSTEM DEMO
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TRK DATA RELAY
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP				
	PL	LV	T3C	TOT	DIR	PL	LV	T3C	TOT	DIR	PL	LV	T3C	TOT	DIR	PL	LV	T3C	TOT	DIR	PL	LV	T3C	TOT	DIR	PL	LV	T3C	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	3	3	6	0	0.0	0	0	3	0	0.0	0	0	3	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	18	15	33	0	0.0	0	0	18	0	0.0	0	0	18	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	1	1.0	29	21	50	1	0.0	0	0	29	0	0.0	0	0	29	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	2	2.0	15	13	28	2	0.0	0	0	15	0	0.0	0	0	15	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	1	1.0	12	10	22	1	0.0	0	0	12	0	0.0	0	0	12	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	0	0.0	24	18	42	0	0.0	0	0	24	0	0.0	0	0	24	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	2	2.0	15	13	28	2	0.0	0	0	15	0	0.0	0	0	15	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	1	1.0	2	3	5	1	0.0	0	0	2	0	0.0	0	0	2	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	5	7	12	0	0.0	0	0	5	0	0.0	0	0	5	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	0	0.0	16	19	35	0	0.0	0	0	16	0	0.0	0	0	16	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	2	2.0	12	13	25	2	0.0	0	0	12	0	0.0	0	0	12	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	1	1.0	2	2	4	1	0.0	0	0	2	0	0.0	0	0	2	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
TOTAL	10	10.0	153	137	290	10	1.1	2.1	0.0	153	55	208	7	3	2.8	1.0	8.5	4.7	0	139	67	206								

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS SAMPL LDR
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					TUS					DIR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV	PL	LV	T3F/	TOT	LV

III-A-277

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS SAMPL ORB
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																				
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	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

III. A-278

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS MAPPING
OSSA
LAUNCHED FROM ETR

III-A-280

III-A-280

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 1
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	NEW	REF	PL	LV	SHYL	TUG	TUG	EXP	TOT	DIR	TOT	DIR	TOT	DIR
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1982	0	0.0	20	0	20	0	0	0	0	0	0.0	0.0	0.0	17	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1983	0	0.0	84	4	88	0	0	0	0	0	0.0	0.0	0.0	74	4	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1984	0	0.0	90	10	100	0	0	0	0	0	0.0	0.0	0.0	80	10	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1985	1	1.0	30	4	34	1	1.0	0.0	0.0	0	0.0	0.0	0.0	27	3	1	0	0	1.0	0.0	2.0	1.0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
TOTAL	1	1.0	224	18	242	1	1.0	0.0	0.0	0.0	0.0	0.0	0.0	198	17	215	1	0	1.0	0.0	2.0	1.0	0	0	182	15	197		

III-A-281

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 2
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV PROG																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
	PL	LV	PL	LV	PROG	PL	LV	LV	LV	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP PIONEER
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP				
	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG
1974	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1975	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1976	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1977	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1978	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1979	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1980	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1981	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1982	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1983	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1984	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1985	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1986	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1987	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1988	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1989	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
1990	0	0.0	0	0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0	0	0.0	0	0.0	0
TOTAL	2	2.0	137	35	172	2	2.0	0.0	0.0	0.0	111	34	145	2	0	2.0	0.0	2.0	0.0	0.0	0	137	23	160						

III-A-283

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2											
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2																
	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	C/B	FL	LV	T3F/	C/B	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1977	0	0.0	45	10	55	0	0.0	0.0	0.0	45	9	54	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1978	0	0.0	103	21	124	0	0.0	0.0	0.0	103	20	123	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1979	2	2.0	40	7	47	2	2.0	0.0	0.0	40	8	48	2	0	0	2.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0
TOTAL	2	2.0	188	38	226	2	2.0	0.0	0.0	0.0	37	225	2	0	0	2.0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0

III-A-284

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
JUP ORB PROBE
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM									
	PL					LV					PL					LV					PL					LV				
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1985	1	1.0	44	9	53	1	1.0	0.0	0.0	0.0	46	5	108	0	0	0	0.0	0.0	0.0	0.0	0.0	41	1	42	3	99	12	61	3	22
1986	0	0.0	12	11	30	0	0.0	0.0	0.0	0.0	19	10	29	0	0	0	0.0	0.0	0.0	0.0	0.0	49	19	3	22	7	11	18	0	0
1987	1	1.0	6	3	9	1	1.0	0.0	0.0	0.0	6	4	10	1	0	0	0.0	0.0	0.0	0.0	0.0	7	11	18	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0
TOTAL	2	2.0	213	38	251	2	2.0	0.0	0.0	0.0	213	37	250	2	0	0	2.0	0.0	4.0	2.0	0	212	30	242						

III-A-285

TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
URANUS TOPS
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	0	0.0	47	5	52	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	104	10	114	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	1	1.0	38	4	42	1	1.0	0.0	0.0	0.0	38	3	41	1	0	0	0.0	0.0	1.0	0.0	1	45	18	63	103	0	42	0	103	0
1987	0	0.0	10	5	15	0	0.0	0.0	0.0	0.0	10	5	15	0	0	0	0.0	0.0	0.0	0.0	0	10	0	10	0	0	0.0	0	0	0
1988	0	0.0	23	11	34	0	0.0	0.0	0.0	0.0	23	10	33	0	0	0	0.0	0.0	0.0	0.0	0	23	0	23	0	0	0.0	0	0	0
1989	1	1.0	8	3	11	1	1.0	0.0	0.0	0.0	8	4	12	1	0	0	0.0	0.0	1.0	0.0	1	6	19	25	0	0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0.0	0	0	0	0
TOTAL	2	2.0	230	38	268	2	2.0	0.0	0.0	0.0	230	37	267	2	0	0	0.0	0.0	2.0	0.0	2	229	37	266	0	0	0.0	0	0	0

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTEROID SURV
OSSA
LAUNCHED FROM ETR

CASE A				CASE B				CASE C-2			
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM			
PL	LV	FL	LV	PL	LV	FL	LV	PL	LV	FL	LV
T3C	TCT	DIR	DIR	5/2/	C	TOT	DIR	NEW	REF	SHL	TUG
								EXP			

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FY	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1982	0	0.0	30	3	33	0	0.0	0.0	0.0	30	3	27	1	28
1983	0	0.0	67	8	75	0	0.0	0.0	0.0	67	6	73	3	70
1984	1	1.0	25	3	28	1	1.0	0.0	0.0	25	2	27	6	36
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0

TOTAL 1 1.0 122 14 136 1 1.0 0.0 0.0 122 11 133 1 0 1.0 0.0 1.0 0.0 0 124 10 134

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE STATION
LAUNCHED FROM EYR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
I21	TOT	DIR	DIR	DIR	DIR	TOT	DIR	DIR	DIR	TOT	DIR	DIR	DIR	TOT	DIR	DIR	DIR	TOT	DIR	DIR	DIR	DIR	TOT	DIR	DIR	TOT	DIR	DIR	DIR
NO	NO	\$	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1979	0	0.0	0	65	65	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1980	0	0.0	0	144	144	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1981	0	1.0	0	53	53	0	1.0	0.0	0.0	0	1.0	0.0	0.0	0	1.0	0.0	0.0	0	1.0	0.0	0.0	0.0	0	1.0	0.0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0

TOTAL	0	1.0	0	262	262	0	2.0	0.0	0.0	0	2.0	0.0	0.0	0	2.0	0.0	0.0	0	2.0	0.0	0.0	0.0	0	2.0	0.0	0	0	61	61

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EXPT SUP CARGO OMSF
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP														
	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR	PL	LV	T3M+	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	14	0	14	0	0.0	0	14	0	14	0	0.0	0	14	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	92	11	103	0	0.0	0	92	11	103	0	0.0	0	92	11	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	113	93	212	0	0.0	0	119	93	212	0	0.0	0	119	93	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	1	1.0	209	225	434	1	1.0	0	209	225	434	1	0	0	225	434	1	0	0	0	0	1.0	0	0	0	0	1.0	0	0	0
1982	6	6.0	241	271	512	6	6.0	0	241	270	511	1	5	0	270	511	1	5	0	0	0	6.0	0	0	0	0	6.0	0	0	0
1983	6	6.0	241	270	511	6	6.0	0	241	270	511	0	6	0	270	511	0	6	0	0	0	6.0	0	0	0	0	6.0	0	0	0
1984	6	6.0	260	294	554	6	6.0	0	260	292	552	0	6	0	292	552	0	6	0	0	0	6.0	0	0	0	0	6.0	0	0	0
1985	6	6.0	304	342	646	6	6.0	0	304	342	646	0	6	0	342	646	0	6	0	0	0	6.0	0	0	0	0	6.0	0	0	0
1986	8	8.0	322	361	683	8	8.0	0	322	360	682	2	6	0	360	682	2	6	0	0	0	8.0	0	0	0	0	8.0	0	0	0
1987	8	8.0	322	361	683	8	8.0	0	322	360	682	0	8	0	360	682	0	8	0	0	0	8.0	0	0	0	0	8.0	0	0	0
1988	8	8.0	322	361	683	8	8.0	0	322	360	682	0	8	0	360	682	0	8	0	0	0	8.0	0	0	0	0	8.0	0	0	0
1989	8	8.0	247	270	517	8	8.0	0	247	270	517	0	8	0	270	517	0	8	0	0	0	8.0	0	0	0	0	8.0	0	0	0
1990	8	8.0	71	72	143	8	8.0	0	71	72	143	0	8	0	72	143	0	8	0	0	0	8.0	0	0	0	0	8.0	0	0	0
TOTAL	65	65.0	2764	2931	5695	65	65.0	0.0	2764	2925	5689	4	61	0.0	2925	5689	4	61	0.0	0.0	65.0	0.0	0	2504	286	2730				

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
PHYSICS LAB
LAUNCHED FROM ETR

	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			
	PL	LV	T3C	TOT	DIR	PL	LV	T3C/	FL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-291

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LIFE SCI LAB
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM									
	PL	LV	NO	\$	\$	PL	LV	NO	\$	\$	PL	LV	NO	\$	\$	PL	LV	NO	\$	\$	PL	LV	NO	\$	\$	PL	LV	NO	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0
1978	0	0.0	13	0	13	0	0.0	0.0	0	0	13	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	10	0	10	0	10	0
1979	0	0.0	65	5	70	0	0.0	0.0	0	0	65	4	69	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	45	0	45	0	45	0
1980	0	0.0	81	3	30	0	0.0	0.0	0	0	81	10	91	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	52	0	52	0	52	0
1981	1	1.0	26	4	30	1	1.0	0.0	0	0	26	3	29	1	0	0	0.0	0.0	1.0	0.0	0	18	5	23	0	18	5	23	0	23
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	10	5	15	0	0.0	0.0	0	0	10	5	15	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	23	10	33	0	0.0	0.0	0	0	23	9	32	0	0	0	0.0	0.0	0.0	0.0	0	9	0	9	0	9	0	9	0	9
1985	1	1.0	9	3	12	1	1.0	0.0	0	0	9	4	13	0	0	0	0.0	0.0	1.0	0.0	0	8	4	12	0	8	4	12	0	12
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0

III. A-293

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EARTH OBS LAB
OMSF
LAUNCHED FROM ETR

CASE A				CASE B				CASE C-2											
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM											
PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
13C	13F	13G	13H	13I	13J	13K	13L	13M	13N	13O	13P	13Q	13R	13S	13T	13U	13V	13W	13X
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0
1977	0	0.0	11	0	0	0.0	0.0	11	0	0.0	0.0	11	0	0.0	0.0	11	0	11	0
1978	0	0.0	32	0	0	0.0	0.0	32	0	0.0	0.0	32	0	0.0	0.0	32	0	32	0
1979	0	0.0	57	3	0	0.0	0.0	57	3	0.0	0.0	57	3	0.0	0.0	57	3	57	3
1980	0	0.0	63	8	0	0.0	0.0	63	7	0.0	0.0	63	7	0.0	0.0	63	7	63	7
1981	1	1.0	24	3	1	1.0	0.0	24	2	1.0	0.0	24	2	1.0	0.0	24	2	24	2
1982	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1983	0	0.0	10	3	0	0.0	0.0	10	3	0.0	0.0	10	3	0.0	0.0	10	3	10	3
1984	0	0.0	23	8	0	0.0	0.0	23	7	0.0	0.0	23	7	0.0	0.0	23	7	23	7
1985	1	1.0	9	2	1	1.0	0.0	9	2	1.0	0.0	9	2	1.0	0.0	9	2	9	2
1986	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0	0
TOTAL	2	2.0	229	27	256	2	2.0	0.0	229	24	253	1	1	0.0	0.0	2.0	0.0	170	9

III. 294

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMM/NAV LAB
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	PL	LV	T3C	TOT	DIR	PL	LV	T30/	PL	LV	PL	LV	TOT	DIR	PROG	FL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

III-A-295

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE MFG LAE
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM												
	C					B					C					B					C					B							
	PL	LV	T3D/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	LV	LV	TOT	DIR	FL	LV	LV	LV	TOT	REF	FL	LV	LV	LV	TOT	EXP	PL	LV	LV	TOT	DIR
1974	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	46	4	50	0	0	0.0	46	3	43	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	37	0	37
1989	0	0.0	103	10	113	0	0	0.0	103	7	110	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	82	0	82
1990	1	1.0	38	4	42	1	1	1.0	38	2	40	1	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	30	5	35

III-A-296

III. A. 296

TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMSAT
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM																								
	PL					LV					FL					LV					LV					LV					LV					LV					LV					LV					LV				
	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$	NO	NO	\$	\$	\$										
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0					
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0					
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0					
1977	0	0.0	8	7	15	0	0.0	0.0	0.0	8	0.0	0.0	0.0	4	12	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1978	0	0.0	15	18	33	0	0.0	0.0	0.0	15	0.0	0.0	0.0	10	25	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1979	2	2.0	13	17	30	2	0.0	0.0	0.0	13	0.0	0.0	0.0	8	21	2	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1980	1	1.0	8	10	18	1	0.0	0.0	0.0	8	0.0	0.0	0.0	4	12	1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1981	1	1.0	7	10	17	1	0.0	0.0	0.0	7	0.0	0.0	0.0	3	10	1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1982	0	0.0	14	18	32	0	0.0	0.0	0.0	14	0.0	0.0	0.0	7	21	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1983	2	2.0	13	17	30	2	0.0	0.0	0.0	13	0.0	0.0	0.0	6	19	2	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1984	1	1.0	8	10	18	1	0.0	0.0	0.0	8	0.0	0.0	0.0	4	12	1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1985	1	1.0	2	3	5	1	0.0	0.0	0.0	2	0.0	0.0	0.0	1	3	1	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1986	0	0.0	5	7	12	0	0.0	0.0	0.0	5	0.0	0.0	0.0	3	8	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1987	0	0.0	14	18	32	0	0.0	0.0	0.0	14	0.0	0.0	0.0	8	22	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1988	2	2.0	10	13	23	2	0.0	0.0	0.0	10	0.0	0.0	0.0	5	15	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1989	1	1.0	2	3	5	1	0.0	0.0	0.0	2	0.0	0.0	0.0	1	3	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0.0	0	0	0	0	0	0	0	0					

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMESTIC COMM
LAUNCHED FROM ETR
NON NASA

FY	CASE A										CASE B										CASE C-2										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					EXP					EXP					
	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	4	4	8	0	0.0	0.0	0.0	4	2	2	2	2	6	0	0	0.0	0.0	0.0	0	7	2	2	2	2	2	2	2	2	9
1978	0	0.0	19	19	38	0	0.0	0.0	0.0	19	7	7	7	7	26	0	0	0.0	0.0	0.0	0	19	7	7	7	7	7	7	7	7	26
1979	1	1.0	28	27	55	1	.4	0.0	0.0	28	9	9	9	9	37	1	0	1.0	0.0	0	28	15	15	15	15	15	15	15	15	15	43
1980	2	2.0	22	21	43	2	.7	0.0	0.0	22	9	9	9	9	31	2	0	2.0	0.0	0	23	18	18	18	18	18	18	18	18	18	41
1981	1	1.0	22	22	44	1	.4	0.0	0.0	22	10	10	10	10	32	1	0	1.0	0.0	0	22	13	13	13	13	13	13	13	13	13	35
1982	1	1.0	32	32	64	1	0.0	.5	0.0	32	14	14	14	14	46	1	0	1.0	0.0	0	32	17	17	17	17	17	17	17	17	17	49
1983	2	2.0	42	35	77	2	0.0	1.0	0.0	42	13	13	13	13	55	2	0	2.0	0.0	0	43	20	20	20	20	20	20	20	20	20	63
1984	2	2.0	47	35	82	2	.7	0.0	0.0	47	14	14	14	14	61	2	0	2.0	0.0	0	35	12	12	12	12	12	12	12	12	12	47
1985	2	2.0	41	35	76	2	.7	0.0	0.0	41	16	16	16	16	57	2	0	2.0	0.0	0	35	11	11	11	11	11	11	11	11	11	30
1986	2	2.0	37	35	72	2	0.0	1.0	0.0	37	17	17	17	17	54	0	2	0.0	0.0	0	16	10	10	10	10	10	10	10	10	10	26
1987	2	2.0	37	35	72	2	0.0	1.0	0.0	37	15	15	15	15	52	0	2	0.0	0.0	0	16	11	11	11	11	11	11	11	11	11	27
1988	2	2.0	37	35	72	2	0.0	1.0	0.0	37	15	15	15	15	52	0	2	0.0	0.0	0	17	10	10	10	10	10	10	10	10	10	27
1989	2	2.0	26	27	53	2	.7	0.0	0.0	26	11	11	11	11	37	0	2	0.0	0.0	0	19	11	11	11	11	11	11	11	11	11	30
1990	2	2.0	7	7	14	2	0.0	1.0	0.0	7	4	4	4	4	11	0	2	0.0	0.0	0	9	11	11	11	11	11	11	11	11	11	20

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
FOREIGN DOMES.
LAUNCHED FROM ETR

FY	CASE A										CASE B										CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																							
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE C-2					CASE C-2					CASE C-2																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
	PL	LV	TOT	DIR	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON A
LAUNCHED FROM ETR

CASE A										CASE B										CASE C-2									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV
T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT	T38/	TOT
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	8	7	15	0	0.0	0.0	0.0	8	3	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1978	0	0.0	22	19	41	0	0.0	0.0	0.0	22	9	31	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1979	3	3.0	16	16	32	3	1.0	0.0	0.0	16	11	27	3	0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1980	1	1.0	13	12	25	1	0.0	1.0	0.0	13	8	21	1	0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1981	2	2.0	7	7	14	2	0.0	1.0	0.0	7	5	12	2	0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1982	0	0.0	5	5	10	0	0.0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1983	1	1.0	4	4	8	1	0.0	1.0	0.0	4	5	9	1	0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1984	0	0.0	5	6	11	0	0.0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1985	1	1.0	4	4	8	1	0.0	1.0	0.0	4	5	9	1	0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1986	0	0.0	5	5	10	0	0.0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1987	1	1.0	4	5	9	1	0.0	1.0	0.0	4	4	8	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1988	0	0.0	5	5	10	0	0.0	0.0	0.0	5	6	11	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1989	1	1.0	2	2	4	1	0.0	1.0	0.0	2	3	5	0	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TOTAL	10	10.0	100	97	197	10	1.0	6.0	0.0	100	77	177	8	2	1.0	3.0	7.0	3.0	0	103	56	159							

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TABLE A-19

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TOS MET SAT
LAUNCHED FROM WTR

A FY	CASE A										CASE B										CASE C-2										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM					SPACE TRANSPORTATION SYSTEM										
	PL	LV	TAT3	TOT	DIR	PL	LV	LV	LV	LV	PL	LV	PROG	DIR	TOT	DIR	PL	LV	LV	LV	LV	LV	LV	TUG	TUG	TUG	TOT	DIR	LV	PROG	
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	7	2	9	0	0.0	0.0	0.0	0.0	7	1	8	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	17	5	22	0	0.0	0.0	0.0	0.0	17	4	21	0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	17	6	23	1	1.0	0.0	0.0	0.0	17	5	22	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1980	1	1.0	22	6	28	1	1.0	0.0	0.0	0.0	22	5	27	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1981	1	1.0	27	7	34	1	1.0	0.0	0.0	0.0	27	5	32	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1982	1	1.0	21	6	27	1	1.0	0.0	0.0	0.0	21	5	26	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1983	1	1.0	17	6	23	1	1.0	0.0	0.0	0.0	17	5	22	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1984	1	1.0	21	7	28	1	1.0	0.0	0.0	0.0	21	5	26	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1985	1	1.0	27	6	33	1	1.0	0.0	0.0	0.0	27	4	31	1	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1986	1	1.0	21	6	27	1	1.0	0.0	0.0	0.0	21	5	26	0	1	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1987	1	1.0	17	7	24	1	1.0	0.0	0.0	0.0	17	5	22	0	1	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1988	1	1.0	17	6	23	1	1.0	0.0	0.0	0.0	17	5	22	0	1	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1989	1	1.0	14	5	19	1	1.0	0.0	0.0	0.0	14	4	18	0	1	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
1990	1	1.0	5	1	6	1	1.0	0.0	0.0	0.0	5	1	6	0	1	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0	0	0
TOTAL	12	12.0	250	76	326	12	12.0	0.0	0.0	0.0	250	59	309	7	5	1.0	5.0	11.0	6.0	0	217	92	309								

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TABLE A-13
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYNC MET SAT
LAUNCHED FROM ETR

FY	CASE A CURRENT EXPEND. SYSTEM										CASE B NEW EXPENDABLE SYSTEM										CASE C-2 SPACE TRANSPORTATION SYSTEM									
	PL					LV					T3F/ 5/2/ T3D/ C					LV					LV					LV				
	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	4	3	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	15	9	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	1	1.0	20	11	31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1980	1	1.0	25	12	37	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1981	1	1.0	30	11	41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1982	1	1.0	24	12	36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1983	1	1.0	20	11	31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1984	1	1.0	24	12	36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1985	1	1.0	30	11	41	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1986	1	1.0	24	12	36	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1987	1	1.0	20	11	31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1988	1	1.0	20	11	31	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1989	1	1.0	13	9	22	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
1990	1	1.0	1	2	3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
TOTAL	12	12.0	270	137	407	12	.6	7.0	1.3	218	111	329	7	5	.3	5.0	10.7	5.7	0	233	84	317								

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TABLE A-19
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
POLAR ERS
LAUNCHED FROM WTR
NON NASA

FY	CASE A										CASE B										CASE C-2														
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP					LV					LV									
	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR	PL	LV	TAT9	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0	0	0	0
1977	0	0.0	63	7	70	15	152	13	97	4	0	0.0	0	0	0	49	6	55	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0
1978	0	0.0	137	15	152	13	97	4	0	0	0	0.0	0	0	0	112	12	124	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0
1979	4	4.0	84	13	97	4	0	0	0	0	0	0.0	0	0	0	69	10	73	4	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0
1980	0	0.0	72	15	87	4	0	0	0	0	0	0.0	0	0	0	59	12	71	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0
1981	4	4.0	68	13	81	4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	56	11	67	2	2	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1982	0	0.0	87	15	102	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	72	12	84	0	0	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1983	4	4.0	66	13	79	4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	55	10	65	0	4	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1984	0	0.0	72	15	87	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	59	12	71	0	0	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1985	4	4.0	34	6	40	4	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	28	5	33	0	4	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0
1987	0	0.0	41	10	51	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	33	8	41	0	0	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1988	0	0.0	108	23	131	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	88	13	107	0	0	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1989	6	6.0	51	8	59	6	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	41	6	47	0	6	0	0	0.0	0	0	0.0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0.0	0	0	0	0.0	0	0	0	0	0	0	0	0	0
TOTAL	22	22.0	883	153	1036	22	11.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	721	123	844	6	16	2.0	0.0	18.0	0.0	0	437	122	559							

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CASE A				CASE B				CASE C-2						
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM						
PL	LV	PL	LV PROG	PL	LV	LV	LV PROG	PL	LV	LV	LV	PL	LV	PROG
T3B/	TOT	DIR	DIR	T3D/	5/2/	TOT	DIR DIR	NEW	REF	TUG	TUG	TOT	DIR	DIR
C				C	C/T					SHIL				EXP

TOTAL	8	8.0	232	92	324	8	1.9	1.0	232	43	275	6	2	0.0	0.0	5.2	5.2	0	199	20	227
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The DoD Programs portion of Table A-19
are contained in Volume VI, Classified
Addendum, pages III-A-306 thru III-A-324

TABLE A-20
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE			CASE			CASE			CASE K		
	CURRENT EXPENDABLE SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM			LNCH VEH PROGRAM		
	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT
	TOTAL	DIRECT		TOTAL	DIRECT		TOTAL	DIRECT		TOTAL	DIRECT	
PHYSICS AND ASTRONOMY												
ASTRONOMY EXPL	0	0	0	0	0	0	0	0	0	291	40	331
RADIO EXPLORER	0	0	0	0	0	0	0	0	0	228	27	255
M, SPHERE L-ETR	0	0	0	0	0	0	0	0	0	108	16	124
M, SPHERE L-WTR	0	0	0	0	0	0	0	0	0	108	29	137
M, SPHERE M-ETR	0	0	0	0	0	0	0	0	0	106	16	122
M, SPHERE M-WTR	0	0	0	0	0	0	0	0	0	106	32	138
M, SPHERE UPPER	0	0	0	0	0	0	0	0	0	252	95	347
ORR SOLAR OBS	0	0	0	0	0	0	0	0	0	59	8	67
GEN RELATIVITY A	0	0	0	0	0	0	0	0	0	82	7	89
GEN RELATIVITY B	0	0	0	0	0	0	0	0	0	58	21	79
RADIO INTERFER	0	0	0	0	0	0	0	0	0	387	5	392
A SOLAR ORBIT-A	0	0	0	0	0	0	0	0	0	126	11	137
A SOLAR ORBIT-B	0	0	0	0	0	0	0	0	0	136	11	147
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	178	3	181
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	73	3	76
HEAD-C	0	0	0	0	0	0	0	0	0	1022	89	1111
L S TELESCOPE	0	0	0	0	0	0	0	0	0	613	52	665
LARGE SOLAR OB	0	0	0	0	0	0	0	0	0	738	42	780
LARGE RADIO OB	0	0	0	0	0	0	0	0	0	577	26	603
SUBTOTAL	0	0	0	0	0	0	0	0	0	5248	533	5781
EARTH OBSERVATIONS												
POLAR EARTH OB	0	0	0	0	0	0	0	0	0	438	64	502
SYNC EARTH OBS	0	0	0	0	0	0	0	0	0	164	27	191
EARTH PHYSICS	0	0	0	0	0	0	0	0	0	147	29	176
SYNC MET SAT	0	0	0	0	0	0	0	0	0	79	7	86
TIROS	0	0	0	0	0	0	0	0	0	55	16	71
POLAR ERS	0	0	0	0	0	0	0	0	0	211	23	234
SYNC ERS	0	0	0	0	0	0	0	0	0	125	27	152
SUBTOTAL	0	0	0	0	0	0	0	0	0	1219	193	1412

TABLE A-20
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE			CASE			CASE K		
	CURRENT EXPENDABLE SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM		
	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT
	TOTAL	DIRECT		TOTAL	DIRECT		TOTAL	DIRECT	
COMMUNICATION AND NAVIGATION									
APPL TECH SAT	0	0	0	0	0	0	669	76	745
SMALL ATS-A	0	0	0	0	0	0	329	52	381
SMALL ATS-B	0	0	0	0	0	0	333	60	393
COOP APPL-A	0	0	0	0	0	0	39	7	46
COOP APPL-B	0	0	0	0	0	0	46	5	51
MED NETWORK	0	0	0	0	0	0	105	20	125
EDUC BROADCAST	0	0	0	0	0	0	115	11	126
SYSTEM DEMO	0	0	0	0	0	0	423	100	523
TRK DATA RELAY	0	0	0	0	0	0	111	45	156
SUBTOTAL	0	0	0	0	0	0	2170	376	2546
PLANETARY									
MARS VIKING	0	0	0	0	0	0	349	41	390
MARS SAMPL LDR	0	0	0	0	0	0	410	34	444
MARS SAMPL ORB	0	0	0	0	0	0	386	34	420
VENUS EXPL ORB	0	0	0	0	0	0	74	17	91
VENUS MAPPING	0	0	0	0	0	0	181	23	204
VENUS LANDER 1	0	0	0	0	0	0	182	17	199
VENUS LANDER 2	0	0	0	0	0	0	172	17	189
JUP PIONEER	0	0	0	0	0	0	101	34	135
GRAND TOUR	0	0	0	0	0	0	189	40	229
JUP ORB PROBE	0	0	0	0	0	0	212	34	246
URANUS TOPS	0	0	0	0	0	0	229	37	266
ASTEROID SURV	0	0	0	0	0	0	124	5	129
COMET RENDEZ	0	0	0	0	0	0	249	11	260
SUBTOTAL	0	0	0	0	0	0	2858	344	3202
OSSA TOTAL	0	0	0	0	0	0	11495	1446	12941

TABLE A-20

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TOTAL NASA	0	0	0	0	0	0	0	0	0	16024	2292	18316
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TABLE A-20
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)

	CASE			CASE			CASE K		
	EXPENDABLE SYSTEM			EXPENDABLE SYSTEM			TRANSPORTATION SYSTEM		
	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT	PAYLOAD	LNCH	DIRECT
	TOTAL	DIRECT		TOTAL	DIRECT		TOTAL	DIRECT	
NON-NASA PROGRAMS									
COMSAT	0	0	0	0	0	0	97	62	159
DOMESTIC COMM	0	0	0	0	0	0	242	116	358
FOREIGN DOMES.	0	0	0	0	0	0	241	92	333
NAV TRFC CON A	0	0	0	0	0	0	83	49	132
NAV TRFC CON B	0	0	0	0	0	0	51	52	103
TOS MET SAT	0	0	0	0	0	0	175	78	253
SYNC MET SAT	0	0	0	0	0	0	185	63	248
POLAR ERS	0	0	0	0	0	0	437	124	561
SYN EARTH RES	0	0	0	0	0	0	199	28	227
NONNASA TOTAL	0	0	0	0	0	0	1710	664	2374
NASA AND NON-NASA TOTAL	0	0	0	0	0	0	17734	2956	20690

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The DoD Programs portion of Table A-20
are contained in Volume VI, Classified
Addendum, pages III- A-330 and III- A-331.

TABLE A-21
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE K SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
PHYSICS AND ASTRONOMY																	
ASTRONOMY EXPL	0	0	0	11	25	22	27	44	36	22	20	34	27	25	27	11	0
RADIO EXPLORER	0	0	0	0	13	48	54	18	4	26	44	20	3	6	1	7	11
M, SPHERE L-ETR	0	0	0	9	15	13	11	16	22	13	4	6	3	5	4	3	0
M, SPHERE L-WTR	0	0	0	0	9	15	13	11	19	22	15	4	9	3	8	4	5
M, SPHERE M-ETR	0	0	0	9	15	13	11	16	22	13	4	6	3	5	2	3	0
M, SPHERE M-WTR	0	0	0	0	9	15	15	11	20	22	15	4	8	3	9	2	5
M, SPHERE UPPER	0	0	0	6	33	45	37	37	40	30	22	25	24	15	16	11	6
ORR SOLAR OBS	0	0	0	0	12	35	20	0	17	39	18	0	0	0	0	0	0
GEN RELATIVITY A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	7	7
GEN RELATIVITY B	0	0	0	0	0	8	34	23	0	0	0	2	5	7	0	0	0
RADIO INTERFER	0	0	0	0	34	142	156	60	0	0	0	0	0	0	0	0	0
SOLAR ORBIT-A	0	0	0	0	0	0	0	0	25	56	26	0	0	5	13	12	0
SOLAR ORBIT-B	0	0	0	0	0	0	0	0	28	61	27	0	0	5	14	12	0
OPT INTERFER.A	0	0	0	0	0	0	0	0	0	0	0	0	42	98	41	0	0
OPT INTERFER.B	0	0	0	0	0	0	0	0	0	0	0	0	18	39	19	0	0
MEAO-C	0	26	79	124	127	80	99	146	79	39	70	73	22	26	59	57	5
L S TELESCOPE	0	0	0	20	60	100	114	65	28	30	80	85	28	25	17	8	5
LARGE SOLAR OR	0	0	0	0	0	0	39	180	212	85	20	19	18	99	96	7	5
LARGE RADIO OR	0	0	0	0	0	0	0	0	41	173	189	83	32	35	26	16	8
SUBTOTAL	0	26	79	179	352	536	630	627	593	631	554	361	242	401	353	160	57
EARTH OBSERVATIONS																	
POLAR EARTH OR	0	0	0	23	63	51	49	65	49	35	33	43	25	17	18	19	12
SYNC EARTH OBS	0	0	0	0	9	18	22	29	17	9	20	25	19	9	6	2	6
EARTH PHYSICS	0	0	0	0	13	33	34	32	21	12	8	8	2	7	1	5	0
SYNC MET SAT	0	0	0	0	0	0	17	38	25	6	0	0	0	0	0	0	0
TIROS	0	0	0	0	0	8	20	13	0	0	5	11	0	0	0	5	9
POLAR ERS	0	0	0	0	0	0	0	0	0	0	12	64	106	52	0	0	0
SYNC ERS	0	0	0	0	0	16	42	34	23	6	0	0	3	16	12	0	0
SUBTOTAL	0	0	0	23	85	126	184	211	135	68	78	151	155	101	37	31	27

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TABLE A-21
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE K SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
COMMUNICATION AND NAVIGATION																		
APPL TECH SAT	0	0	0	6	42	61	95	42	55	78	91	46	25	37	31	50	26	0
SMALL ATS-A	0	0	0	0	14	28	28	33	39	29	25	31	39	32	27	25	23	8
SMALL ATS-B	0	0	0	0	16	37	30	32	36	29	27	30	39	32	27	27	21	10
COOP APPL-A	0	0	0	0	7	11	6	0	0	4	9	7	0	0	0	0	0	0
COOP APPL-B	0	0	0	0	0	0	0	14	11	7	0	0	0	0	4	9	6	0
MED NETWORK	0	0	0	0	27	68	30	0	0	0	0	0	0	0	0	0	0	0
EDUC BROADCAST	0	0	0	0	0	28	64	34	0	0	0	0	0	0	0	0	0	0
SYSTEM DEMO	0	0	0	0	0	0	39	90	70	56	50	36	31	36	33	33	32	17
TRK DATA RELAY	0	0	0	0	3	24	28	14	13	15	20	7	0	6	20	6	0	0
SUBTOTAL	0	0	6	6	109	277	322	299	224	218	222	157	134	143	142	150	108	35
PLANETARY																		
MARS VIKING	0	0	0	0	62	153	94	57	24	0	0	0	0	0	0	0	0	0
MARS SAMPL LOR	0	0	0	0	0	0	0	0	0	0	0	0	0	0	26	129	184	105
MARS SAMPL ORB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	23	117	176	104
VENUS EXPL ORB	0	0	0	0	0	21	51	19	0	0	0	0	0	0	0	0	0	0
VENUS MAPPING	0	0	0	0	0	0	16	63	73	52	0	0	0	0	0	0	0	0
VENUS LANDER 1	0	0	0	0	0	0	0	0	0	16	65	77	41	0	0	0	0	0
VENUS LANDER 2	0	0	0	0	0	0	0	0	0	0	0	0	14	60	74	41	0	0
JUP PIONEER	0	0	0	0	0	0	0	9	58	68	0	0	0	0	0	0	0	0
GRAND TOUR	0	0	0	0	52	124	53	0	0	0	0	0	0	0	0	0	0	0
JUP ORB PROBE	0	0	0	0	0	0	0	0	0	0	43	100	62	23	18	0	0	0
URANUS TOPS	0	0	0	0	0	0	0	0	0	0	0	42	103	63	10	23	25	0
ASTEROID SURV	0	0	0	0	0	0	0	0	0	27	67	35	0	0	0	0	0	0
COMET RENDEZ	0	0	0	0	0	0	0	43	104	52	13	30	18	0	0	0	0	0
SUBTOTAL	0	0	0	0	114	298	214	191	259	215	188	284	238	146	151	310	385	209
OSSA TOTAL	0	26	85	85	425	1012	1198	1304	1321	1161	1109	1073	884	686	795	850	684	328

TABLE A-21
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE K SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990
SPACE STATION SUPPORT																	
SPACE STATION	0	0	0	0	0	0	0	0	19	0	4	14	15	9	0	0	0
EXPT SUP CARGO	0	0	0	0	10	57	68	141	238	245	267	293	310	327	328	327	179
PHYSICS LAB	0	0	0	0	0	0	16	72	82	34	0	0	0	0	0	0	0
COSMIC RAY LAB	0	0	0	0	0	0	0	0	0	0	0	13	59	63	25	0	0
LIFE SCI LAB	0	0	0	0	10	45	52	23	0	0	9	12	0	0	0	0	0
EARTH OBS LAB	0	0	0	11	32	49	43	23	0	0	9	12	0	0	0	0	0
COMM/NAV LAB	0	0	0	0	0	0	12	58	68	28	0	0	0	0	0	12	16
SPACE MFG LAB	0	0	0	0	0	0	0	0	0	0	0	0	0	0	37	82	35
SUBTOTAL	0	0	0	11	52	151	191	336	388	307	289	344	384	399	390	421	230
MANNED EXPRT MODULES																	
GENL SCIENCE	0	0	0	14	41	63	61	37	24	30	29	18	0	0	0	0	0
GENL APPL	0	0	0	15	34	22	24	24	22	18	22	17	19	5	21	7	0
ASTRO RESEARCH	0	0	0	8	18	7	0	0	16	38	24	24	31	37	32	38	31
EARTH OBSERV	0	0	0	8	17	5	0	0	13	32	24	15	14	14	16	22	23
SUBTOTAL	0	0	0	45	110	97	85	61	75	118	99	74	64	56	69	67	54
PALLET MODULES																	
EO PALLET	0	0	0	17	44	28	12	6	11	0	0	0	0	0	0	0	0
BIO RESEARCH	0	0	0	2	8	8	0	0	0	0	0	0	0	0	0	0	0
ASTRONOMY	0	0	0	11	30	23	17	14	12	5	0	0	0	0	0	0	0
FLUID MGMT	0	0	0	0	9	15	9	0	1	4	0	0	0	0	0	0	0
TELEOPERATOR	0	0	0	0	7	10	7	0	0	0	0	0	0	0	0	0	0
MANNED WORK PL	0	0	0	0	4	9	10	8	0	0	0	0	0	0	0	0	0
LG TEL MIRROR	0	0	0	12	27	15	0	0	0	0	0	0	0	0	0	0	0
ASTR MANV UNIT	0	0	0	0	2	3	7	1	0	0	0	0	0	0	0	0	0
SUBTOTAL	0	0	0	42	131	111	62	29	24	9	0	0	0	0	0	0	0
OMSF TOTAL	0	0	0	98	293	359	338	426	487	434	388	418	448	455	459	488	284
TOTAL NASA	0	26	85	523	1305	1557	1642	1747	1648	1543	1461	1302	1134	1250	1309	1172	612

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TABLE A-21
PROGRAM DIRECT COST SUMMARY
DIRECT PROGRAM COSTS INCLUDING LOSSES
(MILLIONS OF 1970 DOLLARS)
CASE K SPACE TRANSPORTATION SYSTEM

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	
NON-NASA PROGRAMS																		
COMSAT	0	0	0	0	12	27	20	19	10	11	17	11	5	0	5	15	7	0
DOMESTIC COMM	0	0	0	0	6	19	35	38	17	16	38	34	29	25	26	27	28	20
FOREIGN DOMES.	0	0	0	0	0	8	44	74	41	22	12	3	18	41	34	13	13	10
NAV TRFC CON A	0	0	0	0	14	36	20	15	10	2	7	2	7	2	8	2	7	0
NAV TRFC CON 9	0	0	0	0	0	9	26	22	8	5	5	2	7	2	7	2	8	0
TOS MET SAT	0	0	0	0	7	25	24	30	21	18	17	18	21	18	14	15	14	11
SYNC MET SAT	0	0	0	0	6	18	17	33	23	19	17	20	20	19	15	16	17	8
POLAR ERS	0	0	0	0	50	116	57	36	48	38	48	24	42	0	1	37	64	0
SYN EARTH RES	0	0	0	0	0	0	0	0	0	0	33	76	46	8	31	33	0	0
NONNASA TOTAL	0	0	0	0	95	258	243	267	178	131	194	190	195	115	141	160	158	49
NASA AND NON-NASA																		
TOTAL	0	26	85	618	1563	1800	1909	1925	1779	1737	1651	1497	1249	1391	1469	1330	661	661

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The DoD Programs portion of Table A-21
are contained in Volume VI, Classified
Addendum, pages III- A- 336 and III- A- 337.

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTRONOMY EXPL
OSSA
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE K SPACE TRANSPORTATION SYSTEM												CASE EXP								
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		
	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	NO	\$	
1974	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
RADIO EXPLORER
LAUNCHED FROM ETR

CASE										CASE K									
CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
PL	LV	TOT	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL	LV	PL
PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR	PROG	DIR
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
M, SPHERE L-ETR
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP				
	PL	LV	TAT3	TOT	DIR	PL	LV	5/2/	LV	LV	PL	LV	LV	LV	LV	SHTL	TUG	TUG	TOT	DIR
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9	9
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15	15
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	10	13
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	11	11
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	14	16
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	22	22
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	10	13
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	4	4
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	3	3
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	3	3
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	3	5
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	4	4
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	3	3
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	.5	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	3.0	3.0	3.0	108	124

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CASE						CASE K					
CURRENT EXPEND. SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM					
PL	LV	PL LV PROG	PL	LV	LV	PL	LV	LV	LV	LV	PL LV PROG
TAT3	TOT DIR	DIR	5/2/	TOT DIR	DIR		NEW REF	SHTL	TUG TUG	TOT DIR	EXP
/O			T								

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TABLE A-22

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TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ORB SOLAR OBS
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	TAT3	TOT	DIR	PL	LV	5/2/	PL	LV	PL	LV	LV	LV	LV	PL	LV	TUG	TUG	LV
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GEN RELATIVELY A Ossa
LAUNCHED FROM WTR

[illegible]

TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SOLAR ORBIT-A
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP				
	PL	LV	TOT	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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CASE C						CASE K					
CURRENT EXPEND. SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM					
PL	LV	PL LV PROG	PL	LV	LV	PL	LV	LV	LV	LV	PL LV PROG
T3C	TOT DIR	DIR	T3D/ C	TOT DIR	DIR		NEW REF	SHTL	TUG TUG	TOT DIR	DIR
											EXP

[illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
HEAD-C
LAUNCHED FROM ETR

CASE										CASE J										CASE K									
CURRENT EXPEND. SYSTEM										NEW EXPENDABLE SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	T3C	TOT	PL	LV	DIR	PROG	DIR	PROG	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV
NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LARGE SOLAR OR
LAUNCHED FROM ETR

CASE										CASE K									
CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
PL	LV	PL	LV	PROG	PL	LV	LV	LV	NO	PL	LV	LV	LV	LV	NO	NO	NO	NO	NO
T30/	TOT	DIR	DIR	DIR	TOT	DIR	DIR	DIR	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
C																			
FY	NO	NO	\$	\$	\$	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	9.0	0.0	0	738	42	780

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TABLE A-22		(MILLIONS OF 1970 DOLLARS)
INDIVIDUAL PROGRAM COST INCLUDING LOSSES	POLAR EARTH OR	OSSA
		LAUNCHED FROM WTR
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24
25	26	27
28	29	30
31	32	33
34	35	36
37	38	39
40	41	42
43	44	45
46	47	48
49	50	51
52	53	54
55	56	57
58	59	60
61	62	63
64	65	66
67	68	69
70	71	72
73	74	75
76	77	78
79	80	81
82	83	84
85	86	87
88	89	90
91	92	93
94	95	96
97	98	99
100	101	102
103	104	105
106	107	108
109	110	111
112	113	114
115	116	117
118	119	120
121	122	123
124	125	126
127	128	129
130	131	132
133	134	135
136	137	138
139	140	141
142	143	144
145	146	147
148	149	150
151	152	153
154	155	156
157	158	159
160	161	162
163	164	165
166	167	168
169	170	171
172	173	174
175	176	177
178	179	180
181	182	183
184	185	186
187	188	189
190	191	192
193	194	195
196	197	198
199	200	201
202	203	204
205	206	207
208	209	210
211	212	213
214	215	216
217	218	219
220	221	222
223	224	225
226	227	228
229	230	231
232	233	234
235	236	237
238	239	240
241	242	243
244	245	246
247	248	249
250	251	252
253	254	255
256	257	258
259	260	261
262	263	264
265	266	267
268	269	270
271	272	273
274	275	276
277	278	279
280	281	282
283	284	285
286	287	288
289	290	291
292	293	294
295	296	297
298	299	300
301	302	303
304	305	306
307	308	309
310	311	312
313	314	315
316	317	318
319	320	321
322	323	324
325	326	327
328	329	330
331	332	333
334	335	336
337	338	339
340	341	342
343	344	345
346	347	348
349	350	351
352	353	354
355	356	357
358	359	360

[illegible][illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OBS
OSSA
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	T39/	TOT	DIR	PL	LV	T39/	TOT	DIR	PL	LV	T39/	TOT	DIR	PL	LV	T39/	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0	0

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TABLE A-22

III- A- 359[illegible]

LAUNCHED FROM WTR

[illegible]

TABLE A-22

III- A- 363[illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
APPL TECH SAT
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K				CASE LV PROG			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1979	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1980	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1981	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1982	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1983	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1984	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1985	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1986	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1987	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1988	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1989	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
1990	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0
TOTAL	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0	0	0.0	0	0

669 76 745

III-A-364

TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SMALL ATS-B OSSA
LAUNCHED FROM WTR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE TRANSPORTATION SYSTEM				CASE K				
	PL	LV	TAT3	DIR	PL	LV	LV	DIR	PL	LV	LV	LV	LV	TUG	TUG	TUG	EXP
1974	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	13	3	16
1978	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	30	7	37
1979	0	0.0	0	0	0	0.0	0.0	0	1	0	0.0	0.0	0.0	0	28	2	30
1980	0	0.0	0	0	0	0.0	0.0	0	1	0	0.0	0.0	1.0	0	26	6	32
1981	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	.5	0	34	2	36
1982	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	.5	0	26	3	29
1983	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	22	5	27
1984	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	.5	0	27	3	30
1985	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	34	5	39
1986	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	26	6	32
1987	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	22	5	27
1988	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	22	5	27
1989	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	.5	0	18	3	21
1990	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	0.0	1.0	0	5	5	10
TOTAL	0	0.0	0	0	0	0.0	0.0	0	2	10	1.0	0.0	9.0	0	333	60	393

TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COOP APPL-B O SSA
LAUNCHED FROM WTR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K			
	PL		LV		PL		LV		PL		LV		PL		LV	
	TAT3 /D	TOT DIR	PROG DIR		5/2/ C	LV	LV	LV	TOT DIR	PROG DIR	NEW REF	LV	LV	SHTL	TUG	TUG EXP
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	14
1982	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	11
1983	0	0.0	0	0	0	0.0	0.0	0.0	0	1	0	0.0	0.0	.5	0	7
1984	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	4
1988	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	9
1989	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	.5	0	6
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0	0.0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0.0	0.0	0.0	0	1	1	0.0	0.0	1.0	1.0	51

TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TRK DATA RELAY
OSSA
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	REF	SHL	LV	TUG	TUG	LV	PROG
	NO	NO	\$	\$	\$	NO	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	3
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	24
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	24
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	24
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	24
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	24
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	15
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	156

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS VIKING
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG	PL	LV	TOT	DIR	PROG
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0

373 390 41 390

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MARS SAMPL LDR
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR	PL	LV	T3F/	TOT	DIR
1974	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1988	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0	0	0.0	0	0	0

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TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS MAPPING
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP				
	PL	LV	TOT	PL	LV	PROG	DIR	PL	LV	TOT	PL	LV	PROG	DIR	PL	LV	TOT	PL	LV	TOT
1974	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0	0.0	0.0	0	0	0	0	0	0.0	0.0	0	0	0

181 23 204

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 1 OSSA
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K				
	PL		LV		PL		LV		PL		LV		PL		LV		
	T3D/ C	TOT DIR	PROG DIR	\$	NO	NO	NO	NO	T3F/ C	LV	TOT DIR	PROG DIR	\$	NO	NO	NO	
1974	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0.0	0.0	0	0	0	0	0	0	0.0	0.0	0	0

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
VENUS LANDER 2
OSSA
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM										CASE NEW EXPENDABLE SYSTEM										CASE K SPACE TRANSPORTATION SYSTEM																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
OSSA
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM										CASE NEW EXPENDABLE SYSTEM										CASE K SPACE TRANSPORTATION SYSTEM										CASE L LAUNCHED FROM ETR																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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	NO	NO	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO

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TABLE A-22		INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)	
		JUP ORB PROBE	OSSA
		LAUNCHED FROM ETR	
1965	1966	1967	1968
1969	1970	1971	1972
1973	1974	1975	1976
1977	1978	1979	1980
1981	1982	1983	1984
1985	1986	1987	1988
1989	1990	1991	1992
1993	1994	1995	1996
1997	1998	1999	2000
2001	2002	2003	2004
2005	2006	2007	2008
2009	2010	2011	2012
2013	2014	2015	2016
2017	2018	2019	2020
2021	2022	2023	2024
2025	2026	2027	2028
2029	2030	2031	2032
2033	2034	2035	2036
2037	2038	2039	2040
2041	2042	2043	2044
2045	2046	2047	2048
2049	2050	2051	2052
2053	2054	2055	2056
2057	2058	2059	2060
2061	2062	2063	2064
2065	2066	2067	2068
2069	2070	2071	2072
2073	2074	2075	2076
2077	2078	2079	2080
2081	2082	2083	2084
2085	2086	2087	2088
2089	2090	2091	2092
2093	2094	2095	2096
2097	2098	2099	2100
2101	2102	2103	2104
2105	2106	2107	2108
2109	2110	2111	2112
2113	2114	2115	2116
2117	2118	2119	2120
2121	2122	2123	2124
2125	2126	2127	2128
2129	2130	2131	2132
2133	2134	2135	2136
2137	2138	2139	2140
2141	2142	2143	2144
2145	2146	2147	2148
2149	2150	2151	2152
2153	2154	2155	2156
2157	2158	2159	2160
2161	2162	2163	2164
2165	2166	2167	2168
2169	2170	2171	2172
2173	2174	2175	2176
2177	2178	2179	2180
2181	2182	2183	2184
2185	2186	2187	2188
2189	2190	2191	2192
2193	2194	2195	2196
2197	2198	2199	2200
2201	2202	2203	2204
2205	2206	2207	2208
2209	2210	2211	2212
2213	2214	2215	2216
2217	2218	2219	2220
2221	2222	2223	2224
2225	2226	2227	2228
2229	2230	2231	2232
2233	2234	2235	2236
2237	2238	2239	2240
2241	2242	2243	2244
2245	2246	2247	2248
2249	2250	2251	2252
2253	2254	2255	2256
2257	2258	2259	2260
2261	2262	2263	2264
2265	2266	2267	2268
2269	2270	2271	2272
2273	2274	2275	2276
2277	2278	2279	2280
2281	2282	2283	2284
2285	2286	2287	2288
2289	2290	2291	2292
2293	2294	2295	2296
2297	2298	2299	2300
2301	23		

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K				
	PL		LV		PL		LV		PL		LV		PL		LV		
	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	TOT	DIR	
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0	0

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TABLE A-22

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CASE						CASE K						
CURRENT EXPEND. SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM						
PL	LV	PL LV PROG	PL	LV	LV	PL	LV	LV	LV	LV	LV	PL LV PROG
T3C	TOT DIR	DIR		5/2/			TOT DIR	DIR		SMTL	TUG TUG	TOT DIR OIR
				C						NEW REF		EXP

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CASE			CASE			CASE K		
CURRENT EXPEND. SYSTEM			NEW EXPENDABLE SYSTEM			SPACE TRANSPORTATION SYSTEM		
PL	LV	PL LV PROG	PL	LV	LV	PL	LV	LV LV PROG
T3C	TOT DIR	DIR	5/2/	TOT DIR	DIR	NEW REF	TUG TUG	TOT DIR OIR
			C					EXP

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE STATION
LAUNCHED FROM ETR

CASE										CASE K									
CURRENT EXPEND. SYSTEM										SPACE TRANSPORTATION SYSTEM									
PL	LV	TOT	DIR	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	TUG	TUG	PL
121										REF									DIR
NO	NO																		
\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$
1974	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1975	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1976	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1977	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1978	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1979	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1980	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1981	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1982	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1983	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1984	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1985	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1986	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1987	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1988	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1989	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
1990	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
TOTAL	0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0

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[illegible]

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<div>CASE</div>						<div>CASE K</div>								
<div>CURRENT EXPEND. SYSTEM</div>			<div>NEW EXPENDABLE SYSTEM</div>			<div>SPACE TRANSPORTATION SYSTEM</div>								
PL LV	PL LV PROG		PL LV	LV		PL LV PROG	PL LV	LV	LV	TUG TUG TOT DIR	EXP			
T3C	TOT DIR DIR		T3F/ 9			TOT DIR DIR	NEW REF	SHTL	TUG	TUG	TUG	TOT DIR	DIR	

[illegible][illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SPACE MFG LAB
LAUNCHED FROM ETR

FY	CASE C										CASE B										CASE A										CASE K										
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K					CASE K					CASE K					CASE K					CASE K					
	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	PL	LV	TOT	LV	PROG	
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0	0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GENL SCIENCE OMSF
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K				
	PL LV		PL LV PROG DIR		PL LV		PL LV PROG DIR		PL LV		PL LV		PL LV		PL LV		
	NO	NO	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
1974	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
GENL APPL OMSF
LAUNCHED FROM NTR

FY	CASE				CURRENT EXPEND. SYSTEM				CASE				NEW EXPENDABLE SYSTEM				CASE				SPACE TRANSPORTATION SYSTEM				CASE K				EXP			
	PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV		PL		LV	
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	\$	
1974	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1975	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1976	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1977	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1978	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1979	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1980	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1981	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1982	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1983	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1984	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1985	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1986	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1987	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1988	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1989	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
1990	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
TOTAL	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
ASTRO RESEARCH OMSF
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM				CASE SPACE TRANSPORTATION SYSTEM				CASE K				
	PL LV		TOT DIR		PL LV		TOT DIR		PL LV		TOT DIR		PL LV		TOT DIR		
	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	\$	\$	
1974	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	8	8
1978	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	18	18
1979	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	7	7
1980	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	16	16
1983	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	38	38
1984	0	0.0	0	0	0	0.0	0.0	0	0	1	0.0	1.0	0.0	0.0	0	19	5
1985	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	10	14
1986	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	13	18
1987	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	13	24
1988	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	13	19
1989	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	15	23
1990	0	0.0	0	0	0	0.0	0.0	0	0	0	0.0	0.0	0.0	0.0	0	7	24

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
EO PALLET
LAUNCHED FROM MTR

FY	CASE				CASE				CASE				CASE K											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				TRANSPORTATION SYSTEM											
	PL	LV	TOT DIR	PROG DIR	PL	LV	TOT DIR	PROG DIR	PL	LV	TOT DIR	PROG DIR	PL	LV	SHIL	TUG	LV	TUG	LV	TUG	PL	LV	PROG DIR	
	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	\$	\$	\$	
1974	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1977	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	17	0	17	
1978	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	44	0	44	
1979	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	28	0	28	
1980	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	1	0.0	1.0	0.0	0.0	0	0	0	7	5	12	
1981	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	1.0	0.0	0.0	0	0	0	2	4	6	
1982	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	2.0	0.0	0.0	0	0	0	1	10	11	
1983	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1984	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1985	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1986	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1987	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1988	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1989	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
1990	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	
TOTAL	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	1	0	4.0	0.0	0.0	0	0	0	99	19	118	

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TABLE A-22

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CASE				CASE				CASE K							
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM							
PL	LV	PL	LV	PL	LV	LV	PROG	PL	LV	LV	LV	LV	PL	LV	PROG
TOT DIR DIR				TOT DIR DIR				TOT DIR DIR				TOT DIR DIR			
								NEW REF				EXP			

[illegible][illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TELEOPERATOR OMSF
LAUNCHED FROM ETR

F Y	CASE CURRENT EXPEND. SYSTEM						CASE NEW EXPENDABLE SYSTEM						CASE K SPACE TRANSPORTATION SYSTEM														
	PL	LV	TOT DIR	PROG	DIR	\$	NO	LV	LV	LV	NO	PL	LV	LV	LV	NO	NO	SHTL	TUG	TUG	LV	LV	PL	TOT DIR	LV	PROG	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0	0	0	0	0	0

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
MANNED WORK PL
LAUNCHED FROM ETR

FY	CASE				CASE				CASE				CASE K											
	CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				TRANSPORTATION SYSTEM											
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	SHL	TUG	LV	LV	TUG	LV	LV	PROG
	NO	NO	\$	\$	NO	NO	NO	\$	NO	NO	NO	\$	NO	NO	NO	\$	NO	NO	NO	NO	NO	NO	NO	\$
1974	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0.0	0.0	0	0	0.0	0.0	0	1	0	0.0	0	1.0	0.0	0	0	0	0	0	31

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TABLE A-22		(MILLIONS OF 1970 DOLLARS)
INDIVIDUAL PROGRAM COST INCLUDING LOSSES	LG TEL MIRROR	OMSF
		LAUNCHED FROM ETR
1	2	3
4	5	6
7	8	9
10	11	12
13	14	15
16	17	18
19	20	21
22	23	24
25	26	27
28	29	30
31	32	33
34	35	36
37	38	39
40	41	42
43	44	45
46	47	48
49	50	51
52	53	54
55	56	57
58	59	60
61	62	63
64	65	66
67	68	69
70	71	72
73	74	75
76	77	78
79	80	81
82	83	84
85	86	87
88	89	90
91	92	93
94	95	96
97	98	99
100	101	102
103	104	105
106	107	108
109	110	111
112	113	114
115	116	117
118	119	120
121	122	123
124	125	126
127	128	129
130	131	132
133	134	135
136	137	138
139	140	141
142	143	144
145	146	147
148	149	150
151	152	153
154	155	156
157	158	159
160	161	162
163	164	165
166	167	168
169	170	171
172	173	174
175	176	177
178	179	180
181	182	183
184	185	186
187	188	189
190	191	192
193	194	195
196	197	198
199	200	201
202	203	204
205	206	207
208	209	210
211	212	213
214	215	216
217	218	219
220	221	222
223	224	225
226	227	228
229	230	231
232	233	234
235	236	237
238	239	240
241	242	243
244	245	246
247	248	249
250	251	252
253	254	255
256	257	258
259	260	261
262	263	264
265	266	267
268	269	270
271	272	273
274	275	276
277	278	279
280	281	282
283	284	285
286	287	288
289	290	291
292	293	294
295	296	297
298	299	300
301	302	303
304	305	306
307	308	309
310	311	312
313	314	315
316	317	318
319	320	321
322	323	324
325	326	327
328	329	330
331	332	333
334	335	336
337	338	339
340	341	342
343	344	345
346	347	348
349	350	351
352	353	354
355	356	357
358	359	360

FY	CASE CURRENT EXPEND. SYSTEM						CASE NEW EXPENDABLE SYSTEM						CASE K SPACE TRANSPORTATION SYSTEM								
	PL LV		PL LV PROG DIR		\$ \$		PL LV		PL LV PROG DIR		\$ \$		PL LV		PL LV SHTL TUG NO		PL LV TUG NO		\$ \$		
	NO	NO	\$	\$	\$	\$	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	\$	
1974	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0.0	0	0	0
1975	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	12	0	12
1978	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	27	0	27
1979	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	10	5	15
1980	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0.0	0.0	0.0	0	49	5	54

TABLE A-22

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
COMSAT
LAUNCHED FROM ETR
NON NASA

FY	CASE CURRENT EXPEND. SYSTEM				CASE NEW EXPENDABLE SYSTEM										CASE K SPACE TRANSPORTATION SYSTEM										CASE L EXP			
	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR	PL	LV	TOT	DIR
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1975	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1976	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1977	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1978	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1979	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1980	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1981	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1982	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1983	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1984	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1985	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1986	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1987	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1988	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1989	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
1990	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0.0	0.0	0.0	0	0	0.0	0.0	0	0	0.0	0.0	0	0.0	0.0	0.0	0	0.0	0.0	0	0	0	0	0

TOTAL 0 0.0 0 0 0 0 0.0 0.0 0.0 0 0 0.0 0.0 0 0 0.0 0.0 0.0 0.0 0.0 0.0 0 0.0 0.0 0 0 0 0 0

TABLE A-22

III-A-407

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
FOREIGN DOMES. NON NASA
LAUNCHED FROM ETR

[illegible]

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON A
LAUNCHED FROM ETR
NON NASA

FY	CASE CURRENT EXPEND. SYSTEM										CASE NEW EXPENDABLE SYSTEM										CASE K SPACE TRANSPORTATION SYSTEM										CASE EXP																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
	PL					LV					5/2/					C/T					PL					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV					LV				

III-A-409

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
NAV TRFC CON 8
LAUNCHED FROM ETR

FY	CASE CURRENT EXPEND. SYSTEM										CASE NEW EXPENDABLE SYSTEM										CASE SPACE TRANSPORTATION SYSTEM										CASE K																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
	A					C					C					C					C					C					C					C					C																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																												
	PL	LV	T38/	TOT	DIR	PL	LV	5/2/	PL	LV	LV	LV	LV	LV	LV	PL	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV	LV

TOTAL 0 0.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 3 3 2.0 0.0 4.0 0 51 52 103

TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
TOS MET SAT
NON NASA
LAUNCHED FROM WTR

FY	CASE CURRENT EXPEND. SYSTEM										CASE NEW EXPENDABLE SYSTEM										CASE K SPACE TRANSPORTATION SYSTEM										CASE L LV PROG DIR									
	PL					LV					PL					LV					PL					LV					PL					LV				
	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1982	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
TOTAL	0	0.0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
LAUNCHED FROM ETR
NON NASA

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					EXP				
	PL	LV	TOT	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL	LV	PROG	DIR	PL
1974	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1975	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1976	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1977	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1978	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1979	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1980	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1981	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1982	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1983	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1984	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1985	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1986	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1987	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1988	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1989	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
1990	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0
TOTAL	0	0.0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0	0	0	0	0

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CASE				CASE				CASE K				
CURRENT EXPEND. SYSTEM				NEW EXPENDABLE SYSTEM				SPACE TRANSPORTATION SYSTEM				
PL	LV	PL	LV PROG	PL	LV	LV	PL LV PROG	PL	LV	LV	LV	PL LV PROG
TAT9	TOT DIR	TOT DIR	DIR	T30/	T30/	TOT DIR	DIR	NEW REF	T30/	SHTL	TUG	TOT DIR
/D/T				B				C			EXP	

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TABLE A-22
INDIVIDUAL PROGRAM COST INCLUDING LOSSES (MILLIONS OF 1970 DOLLARS)
SYN EARTH RES
LAUNCHED FROM ETR

FY	CASE										CASE K									
	CURRENT EXPEND. SYSTEM					NEW EXPENDABLE SYSTEM					SPACE TRANSPORTATION SYSTEM					CASE K				
	PL	LV	TOT	DIR	PROG	PL	LV	LV	LV	LV	PL	LV	LV	LV	LV	NO	NO	NO	NO	NO
1974	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1975	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1976	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1977	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1978	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1979	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1980	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1981	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1982	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1983	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1984	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1985	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1986	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1987	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1988	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1989	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
1990	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0
TOTAL	0	0.0	0	0	0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0	0

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The DoD Programs portion of Table A-22
are contained in Volume VI, Classified
Addendum, pages III- A-415 thru III- A-433.